

LTAEL compliance assessment for Barwon Darling Unregulated River

Background and purpose

The water sharing plan for the Barwon-Darling Unregulated River Water Source requires an assessment of compliance with a Long-term Average Annual Extraction Limit (LTAEL). The LTAEL is sometimes referred to as the 'plan limit'.

The assessment is to be carried out annually by the Department of Planning and Environment – Water, following the end of each water year. LTAEL compliance requires two models: one to represent the LTAEL and one to represent current conditions. The long-term results from both models are compared to assess compliance.

Each water sharing plan defines the LTAEL, how the compliance assessment is to be completed, triggers for non-compliance and subsequent compliance action. The LTAEL includes multiple types of water use. However, the compliance assessment is based on the total.

This report summarises a compliance assessment for the Barwon-Darling Unregulated River Water Source. The assessment was based on best available models, using climate data from 1895 to 2021.

Scenarios and agreed model version

Model scenarios for Cap, water sharing plan and current conditions, were selected based on evaluation against multiple criteria, including whether these had been documented and independently reviewed, how appropriate the management and levels of development are, and consistency of the hydrology. For the Barwon-Darling Unregulated River Water Source, the selected model scenarios reported in Table 1 are the most appropriate for LTAEL compliance purposes.

The scenarios are based on the model scenario used for both the Cap and the water sharing plan to set the LTAEL, and the annual permitted take model used for sustainable diversion limit compliance assessment, as part of the Murray Darling Basin Plan.

Table 1. Model scenarios selected for Barwon-Darling Unregulated River Water Source for LTAEL assessment purposes

Model scenario	System file
Cap and water sharing plan conditions	LTAEL_2021.sqq
Current conditions	DarLAPT02_21Curr.sqq

LTAEL compliance results

LTAEL assessment

The LTAEL is the modelled long-term average annual extractions over the modelling period 1895-2021, using the Cap/water sharing plan scenario model. The results of this analysis are reported in Table 2. The LTAEL for 2020/21 water year for Barwon Darling Unregulated River Water Source is 190.9 gigalitres per year (GL/y). There are also unmodelled extractions estimated at 5.8 GL/y. These unmodelled estimates have not changed and are not included in LTAEL compliance assessment.

Table 2 Modelled and unmodelled long term average annual extractions (1895-2021) for Cap/water sharing plan model scenarios (GL/y)

Extraction category	Cap/WSP Scenario
A Class	1.6
B Class	129.9
C Class	42.6
Floodplain harvesting ¹	16.7
Total modelled extractions	190.9
Basic Rights	0.8
Town Water Supply	2.3
Stock and Domestic	2.7

¹ Floodplain harvesting estimated by the model does not distinguish between overbank flow, exempt rainfall runoff harvesting and non-exempt rainfall runoff harvesting.

Compliance assessment

Compared to the LTAEL scenario, the modelled long term average annual extractions from the current conditions model scenario are reported in Table 3. The current water sharing plan defines non-compliance if extractions under current conditions exceeds LTAEL by 3% or more.

Note: plan limit compliance is assessed on total extractions and not by individual forms of take. The results in Table 3 show current levels of diversions less than LTAEL, and therefore the Barwon-Darling Unregulated River Water Source is compliant with the LTAEL. The key reasons for differences between current and LTAEL scenario results are:

- The previous annual volumetric licences were converted to individual shares of the long-term valley Cap, as part of establishing the 2012 water sharing plan. This reduced licences to roughly 1/3 of the previous size.
- Some Cap shares were assigned to inactive water users, which creates systemic underuse.

- Some irrigation businesses (generally smaller farms) ceased operations during the millennium drought.

Table 3. Modelled long term average annual extractions (1895-2021) for Current and LTAEL scenarios (GL/y)

Extraction category	LTAEL scenario model	Current conditions scenario model
A Class	1.6	7.0
B Class	129.9	101.6
C Class	42.6	30.9
Deemed HEW usage	n/a	30.4
Floodplain harvesting	16.7	15.7
Total modelled extractions	190.9	185.6

Held environmental water entitlements were used extensively in the Barwon-Darling for the first time during the 2020/2021 water year. Environmental uses are not yet included in the model. However, it is apparent, based on recorded usage data in this year, that environmental water managers can fully utilise their entitlements. Based on this, full utilisation has been adopted for LTAEL compliance purposes as discussed later in this report.

Modelled compliance action

No compliance action is required, as the LTAEL assessment shows compliance.

Supporting information

Results over Basin Plan assessment period

The results over the Basin Plan assessment period of 1895-2009 reported in Table 4 are included for reference only. These results will be used to track the degree to which future model updates change these long-term averages.

Table 4. Modelled long term average annual extractions (1895-2009) for Current and LTAEL scenarios (GL/y)

Extraction category	LTAEL Scenario	Current Scenario
A Class	1.7	7.2
B Class	134.2	103.2
C Class	43.8	31.9
Deemed HEW usage	n/a	30.4
Floodplain harvesting	16.4	15.4
Total modelled extractions	196.0	188.1

Usage by Held Environmental Water Entitlements

Tables 2 and 3 reported estimates for held environmental water usage in the current conditions model scenario. These were used for LTAEL compliance purposes. The Basin Plan intends to recover entitlements for this purpose equivalent to 32 GL/y of long-term usage. Current recovery is 1.6 GL/y short of this target. We expect that held environmental water entitlements will be actively used over the longer term to meet environmental objectives.

No environmental water use was recorded in 2019/20, and our current conditions scenario model has represented environmental water use by making the model nodes with these entitlements inactive. This representation still protects the long-term value of the entitlements from extraction by other entitlement holders, because the entitlements were issued as a long-term share of Cap.

Environmental water managers actively used all their entitlements over the 2020/2021 year, reaching the 300% annual use limit for several entitlements and averaging an overall 173% usage of entitlement shares. Their actual usage is detailed in Table 5.

This is a single year of usage, however; a dedicated environmental water manager for the Barwon-Darling has now been appointed and it would be reasonable to assume the held environmental water portfolio will be actively used with an average utilisation level of 100%.

For the 2020/21 LTAEL compliance assessment, we are assuming long-term utilisation of these licences will equal 30.4 GL/y on average based on 2020/2021 usage data.

Table 5. 2020/21 Environmental water share and use by Water Access Licence

Water Access Licence	Category	Share	2020/21 usage (ML)
33752	A	109	215
33701	A	51	153
33704	A	22	66
33784	B	1,566	4,968
33762	A	41	61
33743	B	51	122
33619	B	9,252	2,800
33798	C	6,963	20,153
33621	A	39	58
35943	C	5,535	16,605
35944	B	1,188	3,564
36273	Unregulated river	1,488	1,488
37353	B	0	0
37461	B	323	186
37810	B	3,731	2,151
Total		30,359	52,590
Total usage / total shares			1.73