

LTAEL compliance assessment for the NSW Murray and Lower Darling Regulated Rivers Water Sources

Executive Summary

This report describes the methods used to assess if extractions in the NSW Murray and Lower Darling Regulated Rivers Water Sources are compliant with the limit(s) described in the water sharing plan in the 2022-23 water year. The assessment found that long-term average annual extractions were compliant in 2022-23.

Background and Purpose

The water sharing plan for the NSW Murray and Lower Darling Regulated Rivers Water Sources requires an assessment of compliance with a Long-term Average Annual Extraction Limit (LTAEL), which is sometimes referred to as the 'plan limit'.

The assessment is to be carried out annually 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.

Unlike other NSW valleys in the Murray-Darling Basin, the Water Sharing Plan (WSP) for the NSW Murray and Lower Darling Regulated Rivers Water Sources never identified an LTAEL model scenario.

At the request of NSW, the Murray-Darling Basin Authority has developed an LTAEL scenario in the Source Murray Model (SMM) to undertake a compliance assessment of the NSW Murray and Lower Darling Regulated Rivers Water Sources. The assessment was based on the best available information and climate data from July 1895 to June 2023.

Scenarios and agreed model version

Model scenarios for *Cap*, water sharing plans and current conditions typically form the basis of assessing LTAEL compliance. This assessment has not explicitly modelled the *Cap* scenario for the NSW Murray and Lower Darling Regulated Rivers Water Sources over the 1895-2023 period. The *Cap* scenario is represented using the MSM-Bigmod model^{1 2}. When considering the rules introduced by the WSP it is assumed that diversions in the *Cap* scenario will be greater than the LTAEL scenario.

Scenarios used in the assessment were based in the MDBA's latest version of the SMM, with data inputs from NSW tributaries (Murrumbidgee and Barwon-Darling) supplied from equivalent NSW model scenarios. For this assessment there was no comparison of the LTAEL scenario with a *Cap* scenario and it was therefore assumed that the LTAEL scenario was representative of the plan limit.

¹ MDBA, 2013, *Updated Cap Model Report for the NSW Murray, Victorian Murray and Lower Darling Cap Valleys*, Technical Report 2011/18 v1.1

² Note the Lower Darling is part of the Barwon/Darling-Lower Darling designated River Valley for the Cap

The LTAEL scenario was developed to undertake this assessment and represents the best current understanding of the level of development and policies that existed at the specified dates for LTAEL representation shown in Figure 1.

The current conditions scenario represents our most contemporary representation and understanding of policy and development in the NSW Murray and Lower Darling system. This includes explicit representation of the use of the held environmental water (HEW) portfolio. Both the LTAEL and current conditions scenarios used for this assessment were taken from the most recent commit of the Master branch of the SMM and along with the additional data supplied by NSW to complete this assessment have been stored in the model repository described in Table 1.

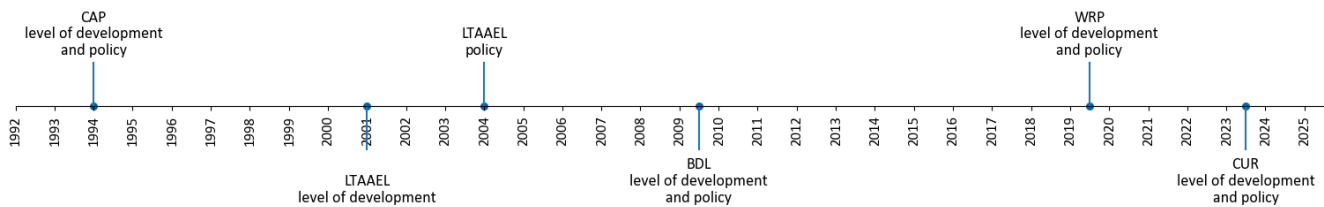


Figure 1 Timeline of policy and level of development dates used for the model scenarios.

Table 1 Provenance of Source Murray Model used for this assessment

Version	Repository	Commit	Input Set
Source 5.32.0	https://bitbucket.org/ewater/mdba/nsw-ltaael-model.git	55636f7	<ol style="list-style-type: none"> BDL.LTAEL BDL.WRP.Current

LTAEL compliance results

Compared to the LTAEL model scenario, the modelled long-term average annual extractions from the current conditions model scenario are reported in Table 2 and Table 3 for the NSW Murray and Lower Darling Regulated River Water Source respectively.

Table 2 NSW Murray modelled long term average annual extractions (1895-2023) for LTAEL and Current scenario models (GL/y)

Extractions	LTAEL	Current Scenario
Consumptive	1745.1	1349.95
Held Environmental Water ³	0	223.9
TLM water recovery ⁴	-17.8	-
Net Inter-Valley Trade	0	79.2
Total	1727.3	1653.1

Table 3 Lower Darling modelled long term average annual extractions (1895-2023) for LTAEL and Current scenario models (GL/y)

Extractions	LTAEL	Current Scenario
Consumptive	139.71	1.7
Held Environmental Water	0	45.5
Net Inter-Valley Trade	-15	2.4
TLM water recovery ⁵	-35.5	-
Broken Hill Water Supply ⁶	-6.1	-
Total	83.1	49.6

The current water sharing plan specifies that there is non-compliance if in the Murray:

- Current condition extractions exceed its LTAEL by 3% or more; or
- Current condition extractions exceed by more than half the difference between the long-term average annual extraction (LTAEL) in the Murray Water Source and Lower Darling Water Source by the water access licences purchased in each water source under the Living Murray Program; or

³ Unlike the Basin Plan, LTAELs do not differentiate between water used for consumptive purposes and water for the environment unless the water for the environment meets the definition of 'licensed environmental water' as specified in s.8 (1) (b) of the Water Management Act 2000. To date the Commonwealth has requested NSW not formally recognise the licences it holds as licensed environmental water.

⁴ TLM water purchase from Murray Irrigation Limited supplementary license

⁵ Removing use associated with purchase of 250 GL supplementary water

⁶ Removing Broken Hill town water supply from Lower Darling as supplied from NSW Murray system in *Current* scenario

- Current condition extractions exceed LTAAE by water access licences purchased under the Living Murray Program in the Lower Darling Water Source.

Also, there is non-compliance if in the Lower Darling:

- Current condition extractions exceed its LTAAEL by 3% or more; or
- Current condition extractions exceed by more than half the difference between the long-term average annual extraction (LTAAE) in the Murray Water Source and Lower Darling Water Source by the water access licences purchased in each water source under the Living Murray Program; or
- Current condition extractions exceed LTAAE by water access licences purchased under the Living Murray Program in the Lower Darling Water Source.

The results in Table 2 and Table 3 **Error! Reference source not found.** show current levels of extractions for both NSW Murray and Lower Darling are compliant with their respective LTAAEL. Therefore, the long-term extractions in the NSW Murray and Lower Darling Regulated Rivers Water Sources are compliant with LTAAEL, and no compliance action is required.

Supporting information

Results over Basin Plan assessment period

The results over the Basin Plan assessment period of 1895-2009 reported in Table 4 and Table 5 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 NSW Murray modelled long term average annual extractions (1895-2009) for LTAAEL and Current scenario models (GL/y)

Extractions	LTAAEL	Current Scenario
Consumptive	1,784.7	1381.8
Held Environmental Water	0	227.2
TLM water recovery	-17.8	0
Net Inter-Valley Trade	0	78.2
Total	1766.9	1687.2

Table 5 Lower Darling modelled long term average annual extractions (1895-2009) for LTAAEL and Current scenario models (GL/y)

Extractions	LTAAEL	Current Scenario
Consumptive	127.2	1.8

Extractions	LTAEL	Current Scenario
Held Environmental Water	0	44.9
Net Inter-Valley Trade	-15.5	2.4
TLM water recovery	-35.5	-
Broken Hill Water Supply	-6.4	-
Total	88.7	49.0