

# LTAAEL compliance for the NSW Murray and Lower Darling Regulated Rivers Water Sources

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## Executive summary

This report describes how extractions from the Murray and Lower Darling rivers were assessed for compliance with the limit described in the associated water sharing plan. The assessment found long-term average annual extractions were compliant for the 2021–22 water year.

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## Background and purpose

The *Water Sharing Plan for the NSW Murray and Lower Darling Regulated Rivers Water Sources 2016* (the water sharing plan, or WSP) requires an assessment of compliance with a long-term average annual extraction limit (LTAAEL), which is sometimes referred to as the ‘plan limit’.

Assessment must be carried out annually following the end of each water year. LTAAEL compliance requires two models: one to represent the LTAAEL and one to represent current conditions. Long-term results from both models are compared to assess compliance. Each water sharing plan defines the LTAAEL, how the compliance assessment is to be completed, triggers for noncompliance and subsequent compliance action. The LTAAEL includes multiple types of water use; however, compliance is assessed based on the total.

Unlike other NSW valleys in the Murray-Darling Basin, the WSP for the NSW Murray and Lower Darling Regulated Rivers Water Sources does not identify an LTAAEL model scenario.

At the request of NSW, the Murray-Darling Basin Authority has developed an LTAAEL 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 2022.

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## Scenarios and model version

Model scenarios for Basin Cap (Cap), water sharing plans and current conditions typically form the basis of assessing LTAAEL compliance. This assessment has not explicitly modelled the Cap scenario for the NSW Murray and Lower Darling Regulated Rivers Water Sources over the 1895–2022 period because previous work undertaken by MDBA demonstrated that the Cap model had materially higher diversions than models using WSP rules and development. The Cap scenario is represented using the MSM-Bigmod model<sup>1</sup>. When considering previous work undertaken by MDBA and the intent of the rules introduced by the WSP, it is assumed for the purposes of LTAAEL compliance assessment that Cap scenario diversions will be greater than WSP scenario diversions; hence the LTAAEL is defined by the WSP scenario.

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<sup>1</sup> MDBA, 2013, *Updated Cap Model Report for the NSW Murray, Victorian Murray and Lower Darling Cap Valleys*, Technical Report 2011/18 v1.1. The Lower Darling is part of the Barwon Darling-Lower Darling designated river valley for the Cap.

Scenarios used in the assessment were based on the MDBA’s latest version of the SMM. NSW tributary (Murrumbidgee and Barwon-Darling) data inputs were supplied from equivalent NSW model scenarios. The WSP scenario and Cap scenario were not compared for this assessment and it was therefore assumed that the WSP scenario is the best representation of the plan limit and becomes the LTADEL scenario.

The LTADEL scenario adopted for this assessment represents best current understanding of the level of development and policies that existed at the specified dates for LTADEL representation shown in Figure 1.

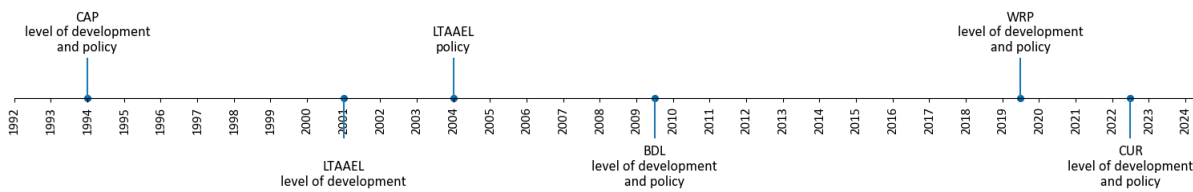


Figure 1: Timeline of policy and level of development dates used for the model scenarios

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

Table 1: Provenance of Source Murray model used for this assessment

| Version       | Repository  | Commit  | Input set                           |
|---------------|---|---------|-------------------------------------|
| Source 5.20.0 | <a href="https://bitbucket.org/ewater/mdba/nsw-ltaael-model.git">https://bitbucket.org/ewater/mdba/nsw-ltaael-model.git</a> | da9d186 | 1. BDL.LTADEL<br>2. BDL.WRP.Current |

## LTADEL compliance results

The results in Table 2 and Table 3 show that current extraction levels for both NSW Murray and Lower Darling are less than their respective LTADEL. Therefore, the long-term extractions in the NSW Murray and Lower Darling Regulated Rivers Water Source comply with the LTADEL.

Table 2: NSW Murray modelled long-term average annual extractions (1895–2022) for LTAEL and current conditions scenario models gegalitres per year (GL/yr)

| Extractions                           | LTAEL          | Current Scenario |
|---------------------------------------|----------------|------------------|
| Consumptive                           | 1,732.5        | 1,266.8          |
| Held environmental water <sup>2</sup> | 0              | 216.2            |
| TLM water recovery <sup>3</sup>       | -17.8          | -                |
| Net inter-valley trade                | 0              | 86.6             |
| <b>Total</b>                          | <b>1,714.7</b> | <b>1,569.6</b>   |

Table 3: Lower Darling modelled long-term average annual extractions (1895–2022) for LTAEL and current conditions scenario models (GL/yr)

| Extractions                           | LTAEL       | Current scenario |
|---------------------------------------|-------------|------------------|
| Consumptive                           | 145.6       | 3.9              |
| Held environmental water              | 0           | 45.2             |
| Net inter-valley trade                | -15         | 1.2              |
| TLM water recovery <sup>4</sup>       | -35.5       | -                |
| Broken Hill Water Supply <sup>5</sup> | -6.1        | -                |
| <b>Total</b>                          | <b>89.0</b> | <b>50.3</b>      |

## 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.

<sup>2</sup> Unlike the Basin Plan, LTAELs do not differentiate between water for consumption 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 and is nominated by the entitlement holder to be registered as ‘licensed environmental water’. To date, the Commonwealth has requested NSW not formally recognise the licences it holds as licensed environmental water.

<sup>3</sup> TLM water purchase from Murray Irrigation Limited supplementary license.

<sup>4</sup> Removing use associated with purchase of 250 GL supplementary water.

<sup>5</sup> Removing Broken Hill town water supply from Lower Darling as supplied from NSW Murray system in current conditions scenario.

Table 4: NSW Murray modelled long-term average annual extractions (1895–2009) for LTAEL and current conditions scenario models (GL/yr)

| Extractions              | LTAEL          | Current scenario |
|--------------------------|----------------|------------------|
| Consumptive              | 1,770.4        | 1,296.1          |
| Held environmental water | 0              | 219.1            |
| TLM water recovery       | -17.8          | 0                |
| Net inter-valley trade   | 0              | 87.2             |
| <b>Total</b>             | <b>1,752.6</b> | <b>1,602.1</b>   |

Table 5: Lower Darling modelled long term average annual extractions (1895–2009) for LTAEL and current conditions scenario models (GL/yr)

| Extractions              | LTAEL       | Current scenario |
|--------------------------|-------------|------------------|
| Consumptive              | 146.1       | 3.9              |
| Held environmental water | 0           | 44.0             |
| Net inter-valley trade   | -15.5       | 1.1              |
| TLM water recovery       | -35.5       | -                |
| Broken Hill Water Supply | -6.4        | -                |
| <b>Total</b>             | <b>88.7</b> | <b>49.0</b>      |