LTAAEL compliance assessment for Belubula Regulated River Water Source

Executive summary

This report describes the methods used to assess if extractions in the Belubula Regulated River are compliant with the limit described in the water sharing plan. The assessment has found that long term average annual extractions are compliant for the 2020-21 water year.

Background and purpose

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

The assessment is to be carried out annually by the Department of Planning and Environment - Water (DPE Water), following the end of each water year. LTAAEL compliance requires two models: one to represent LTAAEL and one to represent current conditions. The 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 non-compliance and subsequent compliance action. The LTAAEL includes multiple types of water use. However, the compliance assessment is based on the total.

This report summarises a compliance assessment for the Belubula Regulated 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 scenario model selection criteria, including whether these had been documented and independently reviewed, how appropriate the management and levels of development are, and consistency of the hydrology. In the case of the Belubula Regulated River, the selected model scenarios are reported in Table 1.

A Source model of the Belubula system has recently been completed and submitted as part of the review by the MDBA for the Lachlan Water Resource Plan. The scenario model used for the Basin Plan baseline diversion limit is our best candidate for water sharing plan scenario, and the scenario model used for annual permitted take compliance, is our best candidate for the current conditions scenario. These Source based scenario models have the highest level of documentation and review of models for the Belubula Regulated River Water Source and are hydrologically consistent. A Cap scenario model was embedded in the Lachlan IQQM, however; this is not hydrologically consistent nor has this been updated in Lachlan IQQM for Belubula water sharing plan or current conditions.

Further work is needed for the following water year to ensure a scenario model configuration fully conforms with LTAAEL definitions, and to fully document and independently review the Source model to assess the model build and scenario configuration.

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Table 1. Model scenarios selected for Belubula Regulated River Water Source for LTAAEL assessment purposes

Model scenario	System file	Input data set
WSP conditions	BELB_4.9.0_16-02-2022.rsproj	BDL
Current conditions	BELB_4.9.0_16-02-2022.rsproj	PBP.WSP

LTAAEL compliance results

LTAAEL assessment

The LTAAEL is the modelled long-term average annual extractions calculated over the duration of the available climate record, using either the Cap or the water sharing plan scenario model, whichever is the lesser. For this assessment the modelling period 1895-2021 is used. As there is only a hydrologically consistent water sharing plan scenario model currently available, our LTAAEL is in this instance based solely on results from that scenario model of 5,757 megalitres per year (ML/y), as reported in Table 2. There are also unmodelled extractions (for water taken under basic landholder rights), estimated at 200 ML/y. These unmodelled estimates have not changed and are not included in LTAAEL compliance assessment

Table 2. Modelled long term average annual extractions (1895-2021) for water sharing plan scenario model (ML/y)

Extraction category	Water sharing plan scenario model
Modelled extractions	
General Security	3,071
Supplementary access	1,554
High security	962
Stock and domestic	170
Total modelled extractions	**5,757**
Unmodelled extractions	
Basic Rights	200

This water sharing plan will be revised to include all water take components, such as plantation forestry and harvestable right dams, to harmonise with reporting required under the Basin Plan. In this regulated river water sharing plan area, the water source boundary is defined by the bank of the regulated river and hence plantation forestry and harvestable rights dams are located within the adjacent unregulated river water source.

In addition, water taken under a basic landholder right has been excluded from the compliance assessment. This is because any unmodelled estimates are excluded if no assessment of change has been made.

Compliance assessment

Compared to the LTAAEL 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 long term average annual extractions exceed LTAAEL by 3% or more.

The results show current conditions long term average annual extractions are less than LTAAEL, and therefore, extractions in the Belubula Regulated River Water Source is compliant with LTAAEL. However, further work is needed to confirm this, which will be the subject of an independent review of the Belubula scenario model build and configuration.

`Table 3. Modelled long term average annual extractions (1895-2021) for Current and LTAAEL scenario models (ML/y)

Extraction category	LTAAEL scenario model	Current scenario model
Modelled extractions		
General Security	3,071	1,830
Supplementary access	1,554	890
High security	962	1,029
Stock and domestic	170	163
Total modelled extractions	**5,757**	**3,912**

Supporting information

Results over Basin Plan assessment period

The results over the Basin Plan assessment period of 1895-2009 are included for reference only. These results will be used to track significance of future model updates.

Table 4. Modelled long term average annual extractions over the Basin Plan reference period 1895-2009 (ML/y)

Extraction category	LTAAEL scenario model	Current scenario model
Modelled extractions		
General Security	3,099	1,867
Supplementary access	1,553	870
High security	974	1,033
Stock and domestic	173	165
Total modelled extractions	**5,799**	**3,935**