

Long-term Extraction Limit compliance assessment for Upper Namoi and Lower Namoi Regulated River Water Source

Executive summary

This report describes the methods used to assess if extractions in the Namoi Regulated River are compliant with the limit described in the Water Sharing Plan. The assessment has found that long term average annual extractions are not compliant for the 2021-22 water year.

Background and purpose

The water sharing plan for the Upper Namoi and Lower Namoi Regulated River Water Source (hereafter Namoi Regulated River Water Source) requires an assessment of compliance with a Long-term Extraction Limit (LTEL), which is sometimes referred to as '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. LTEL compliance requires two models: one to represent the LTEL and one to represent current conditions. The long-term results from both models are compared to assess compliance. Each water sharing plan defines the plan limit, how the compliance assessment is to be completed, triggers for non-compliance and subsequent compliance action. The LTEL includes multiple types of water use. However, the compliance assessment is based on the total.

This report summarises a compliance assessment for the Namoi Regulated River Water Source. The assessment was based on best available models, using climate data from 1895 to 2020.

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. For the Namoi Regulated River Water Source, the selected scenario models reported in Table 1 are the most appropriate for LTEL compliance.

Cap, Water Sharing Plan and Current Condition scenario models are consistently based on the same model. This is a new model that is more recently built, compared to the previous model in the 'IQQM' modelling platform (used in 2020-21 compliance report). This new model has been approved as the best available model for this compliance assessment.

Table 1: Scenario models selected for Namoi regulated river water source for LTAAEL assessment purposes

Scenario model	System file	Scenario Input Set
Cap conditions	NAMO_CAL_274_5.20.0.12549.rsproj	LongTerm_Scenarios.CAP_93_94...NewAreaOldRisk
Water Sharing Plan conditions	NAMO_CAL_274_5.20.0.12549.rsproj	LongTerm_Scenarios.BDL_99_00...NewAreaOldRisk
Current conditions	NAMO_CAL_274_5.20.0.12549.rsproj	LongTerm_Scenarios.CurrentConditions_15_16...HEW_IRRI
Current conditions with Supplementary AWD reduction	NAMO_CAL_274_5.20.0.12549.rsproj	LongTerm_Scenarios.CurrentConditions_15_16...HEW_IRRI.Supp_AWD_Reduction.Supp_36_AWD

The recently completed model in the ‘Source’ modelling platform is of a superior calibration, as it is based on an extended climatic period and more accurate development data. The model is currently in the late stages of an independent review. So far, the reviews indicate that the new model is the best available model that supersedes and is superior to the existing IQQM model. One major improvement of the new model is the ability to estimate floodplain harvesting take. This is an updated method and is part of the modelled component. In prior compliance assessments, a fixed estimate of floodplain harvesting as reported in the Basin Plan was used instead.

At the time of writing, the model only runs to 2020. The same long-term period (1895-2020) is used to compare the different scenarios for LTEL compliance (i.e. CAP, WSP and Current Condition model results are assessed over the same consistent period). In future, we will extend the model to run up to 2022. It is not expected that this will have any significant impact on the compliance outcomes.

LTEL compliance results

LTEL assessment

The LTEL 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 1895-2020 is used. The results of this analysis are reported in Table 2. The LTEL for 2021/22 water year for the Namoi Regulated River Water Source is 226.8 gigalitres per year (GL/y) based on the water sharing plan scenario model. Unmodelled extractions are not considered for this assessment.

Table 2: Modelled and unmodelled long-term average annual extractions (1895-2020) for Cap and WSP model scenarios (GL/y)

Extraction category	Cap scenario model	WSP Scenario model
Modelled extractions		
General security	128.4	143.6

Extraction category	Cap scenario model	WSP Scenario model
Supplementary access	66.1	34.4
High security and Stock and Domestic	5.1	4.6
Floodplain harvesting ¹	35.6	44.3
Total modelled extractions	235.0	226.8
Unmodelled extractions estimates		
Stock and Domestic rights ²	1.9	1.9
Total extractions	236.9	228.8³

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 LTEL scenario, the modelled long term average annual extractions from the current condition scenario model are reported in Table 3. The extraction categories include provision for managing growth in extractions from the Peel regulated river water source by Tamworth Regional Council (TRC). The water sharing plan specifies that 95% of growth in TRC extractions is managed in the Namoi regulated river water source.

Our analysis reported in the Peel Regulated River Water Source plan limit assessment report estimated Tamworth Regional Council extractions increased by 0.24 GL/y (from 8.36 GL/y to 8.60 GL/y). The volume to be managed in the Namoi Regulated River Water Source is therefore 0.23 GL/y.

The current water sharing plan specifies that there is non-compliance where:

- Current condition extractions exceed LTEL by 3% or more.
- Current condition extractions exceed the average of Cap and LTEL.
- Current condition extractions exceed Cap.

¹ This estimate does not include rainfall runoff harvesting which is now exempt under the Water Management (General) Regulation 2018.

² Clause 17 of Water Sharing Plan for the Upper Namoi and Lower Namoi Regulated River Water Sources 2016 (2015 SI 631) accessed 31 May 2023.

³ We have done the calculation based on non-rounded numbers. The report is based on rounded figures, which may lose the resolution when summing up.

- Any exceedance of LTEL for 3 consecutive water years

Note: Plan limit compliance is assessed on total extractions and not by individual forms of take. Including the estimated extraction by Tamworth Regional Council, the results in Table 3 show current levels of extractions of 235.9 GL/y. This is 4.0% more than LTEL of 226.8 GL/y. Therefore, the Namoi Regulated River Water Source is not compliant with the LTEL.

Table 3: Modelled long-term average annual extractions (1895-2020) for Current and LTEL scenarios (GL/y)

Extraction category	LTEL scenario model	Current conditions scenario model
Modelled extractions		
General security	143.6	138.7
Supplementary access	34.4	41.7
High security and Stock and Domestic	4.6	4.8
Floodplain harvesting ¹	44.3	50.5
Total modelled extractions	226.8	235.7
Tamworth Regional Council growth	n/a	0.2
Total extractions including TRC growth	226.8	235.9

Modelled compliance action

At the time of writing, floodplain harvesting licencing framework is not yet in place. The water sharing plan specifies what action is required where there is non-compliance. The current plan requires that the maximum available water determination (AWD) made for supplementary water access licences is reduced to bring total extractions back to the limit. This AWD is normally 1.00 megalitre per share (ML/share), however; an AWD of 0.36 ML/share is required to bring total extractions back to the limit. The current condition scenario with the reduced AWD indicates long-term modelled extractions of 226.7 GL/y, which is less than the LTEL scenario (Table 4).

Table 4: Modelled long-term average annual extractions (1895-2020) for Current and LTEL scenarios (GL/y)

Extraction category	LTEL scenario model	Current conditions with Supplementary AWD of 0.36ML/share
Modelled extractions		
General security	143.6	140.6
Supplementary access	34.4	27.2
High security and Stock and Domestic	4.6	4.8

Extraction category	LTEL scenario model	Current conditions with Supplementary AWD of 0.36ML/share
Floodplain harvesting ¹	44.3	53.8
Total modelled extractions	226.8	226.5
Tamworth Regional Council growth	n/a	0.2
Total extractions including TRC growth	226.8	226.7

Floodplain harvesting licences are expected to commence in 2023/24. When this occurs, the department will revise the compliance assessment. The licences have been designed to remove growth in floodplain harvesting. This will mean that the supplementary water access AWDs can be increased.

Supporting information

Results over Basin Plan assessment period

The results over the Basin Plan assessment period of 1895-2009 reported in 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 5: Modelled long-term average annual extractions (1895-2009) for LTEL and current scenario models (GL/y)

Extraction category	LTAEL scenario model	Current conditions scenario model
Modelled extractions		
General security	147.4	135.7
Supplementary access	34.7	42.3
High security and Stock and Domestic	4.6	4.8
Floodplain harvesting ¹	44.7	50.9
Total modelled extractions	231.4	233.7