

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 2022-23 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 Department¹ on behalf of the Minister 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 2023.

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 was approved as the best available model for 2021-22 compliance assessment and is also used for 2022-23 compliance assessment.

¹ Refers to the current Department of Climate Change, Energy, the Environment and Water (DCCEEW), as well as its predecessor(s) and likely successor(s) over the life cycle of each WSP).

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_APT_002_5.20.0.12549.rsproj	LongTerm_Scenarios.CAP_93_94...NewAreaOldRisk
Water Sharing Plan conditions	NAMO_APT_002_5.20.0.12549.rsproj	LongTerm_Scenarios.BDL_99_00...NewAreaOldRisk
Current conditions	NAMO_APT_002_5.20.0.12549.rsproj	LongTerm_Scenarios.CurrentConditions_15_16...HEW_IRRI
Current conditions with Supplementary AWD reduction	NAMO_APT_002_5.20.0.12549.rsproj	LongTerm_Scenarios.CurrentConditions_15_16...HEW_IRRI.Supp_AWD_Reduction.Supp_43_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.

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 1895-2023 is used. The results of this analysis are reported in Table 2. The LTEL for 2022/23 water year for the Namoi Regulated River Water Source is 224.6 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 (1895-2023) for Cap and WSP model scenarios (GL/y)

Extraction category	Cap scenario model	WSP Scenario model
Modelled extractions		
General security	120.9	141.5
Supplementary access	65.9	35.1
High security and Stock and Domestic	4.2	4.5

Extraction category	Cap scenario model	WSP Scenario model
Floodplain harvesting ²	34.3	43.5
Total modelled extractions	225.3	224.6
Unmodelled extractions estimates		
Stock and Domestic rights ³	1.9	1.9
Total extractions	227.2	226.5⁴

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. 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 0.23 GL/y (from 8.36 GL/y to 8.59 GL/y). The volume to be managed in the Namoi Regulated River Water Source is therefore 0.22 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
- Any exceedance of LTEL for 3 consecutive water years

Note that 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 231.9 GL/y. This is 3.3% more than LTEL of 224.6 GL/y. Therefore, the Namoi Regulated River Water Source is not compliant with the LTEL.

² This estimate does not include rainfall runoff harvesting which is now exempt under the Water Management (General) Regulation 2018.

³ 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

⁴ 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.

Table 3 Modelled long term average annual extractions (1895-2023) for Current and LTEL scenarios (GL/y)

Extraction category	LTEL scenario model	Current conditions scenario model
Modelled extractions		
General security	141.5	136.0
Supplementary access	35.1	42.5
High security and Stock and Domestic	4.5	4.7
Floodplain harvesting²	43.5	48.6
Total modelled extractions	224.6	231.7
Tamworth Regional Council growth	n/a	0.2
Total extractions including TRC growth	224.6	231.9

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 made for supplementary water access licences is reduced to bring total extractions back to the limit. This AWD is normally 1.00 ML/share however an AWD of 0.42 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 224.5 GL/y, which is lower than the LTEL scenario (Table 4).

Table 4 Modelled long term average annual extractions (1895-2023) for Current and LTEL scenarios (GL/y)

Extraction category	LTEL scenario	Current conditions with Supplementary AWD of 0.42ML/share	Current conditions with FPH licence scenario	Current conditions with FPH licence scenario + Supplementary AWD of 0.65ML/share
Modelled extractions				
General security	141.5	137.7	136.4	137.1
Supplementary access	35.1	30.2	43.7	38.3
High security and Stock and Domestic	4.5	4.7	4.7	4.7
Floodplain harvesting²	43.5	51.8	43.8	44.4
Total modelled extractions	224.6	224.3	228.6	224.5

Extraction category	LTEL scenario	Current conditions with Supplementary AWD of 0.42ML/share	Current conditions with FPH licence scenario	Current conditions with FPH licence scenario + Supplementary AWD of 0.65ML/share
Tamworth Regional Council growth	n/a	0.2	0.2	0.2
Total extractions including TRC growth	224.6	224.5	228.8	224.8

Floodplain harvesting licences are expected to commence in late 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.

The floodplain harvesting licensing and accounting framework provides for a partial exemption for runoff into tailwater drains. This exempt rainfall-runoff volume is excluded from the definition of floodplain harvesting in the above discussions and from the definition of LTEL with the amended Water Sharing Plan.

The long term average annual extractions are also shown in Table 4. The results show extractions under current conditions with floodplain harvesting exceed LTEL by 1.9%. However, even if this is below the 3% trigger threshold, the Namoi Regulated River Water Source is expected to still be non-compliant under the rules of the Water Sharing Plan because of

- Current condition extractions with FPH licence (228.8 GL) exceeding the average of Cap and LTEL (calculated from Table 2, this is 225.0 GL)
- Current condition extractions with FPH licence (228.8 GL) exceeding Cap (225.3 GL)

Therefore, a reduction of Supplementary AWD reduction may still be implemented. However, the reduction will be less than if Floodplain harvesting licences are not in place. Table 4 shows that an AWD of 0.65 ML/share would bring the total extractions including Tamworth Regional Council growth back to the limit.

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	145.6	140.5
Supplementary access	34.8	42.3
High security and Stock and Domestic	4.5	4.8
Floodplain harvesting²	43.5	48.5
Total modelled extractions	228.3	236.0