

LTAEL compliance assessment for Hunter Regulated River Water Source

Executive summary

This report describes the method used to assess if extractions in the Hunter Regulated River Water Source are compliant with the limit described in the water sharing plan in the 2021/22 water year. The assessment has found that long term average annual extractions were compliant in 2021/22.

Background and purpose

The water sharing plan for the Hunter Regulated River Water Source 2016 (the Plan) requires an assessment of compliance with a Long-term Average Annual Extraction Limit (LTAEL). The LTAEL 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. Unlike in the case of other (mostly inland) valleys, the LTAEL for the Hunter Regulated River Water Source is defined numerically in the Plan as 217 gegalitres per year (GL/yr). Therefore, LTAEL compliance for the Hunter Valley requires only a model scenario for current conditions representing “as closely as possible all water use development, water supply system management and other factors affecting the quantity of long-term average annual extraction” at the time of the assessment.

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.

This report summarises a compliance assessment for the Hunter Regulated River Water Source for the 2021/22 water year. The assessment was based on the best available model.

Model version

There is only one model available which represents current conditions for the Hunter Regulated River Water Source, and it is reported in Table 1. This is a combined model inclusive of Patterson River and Williams River systems.

An LTAEL model is not required to assess compliance as the limit is defined numerically in the water sharing plan. However, some information on the available LTAEL scenario models follows:

1. A model was developed in the late 1990s – early 2000s to support the development of the first water sharing plan. This model was used to derive the LTAEL of 217 GL/yr, as noted in the plan. This model was externally reviewed at the time.
2. The model was updated to support the 2016 remake of the plan. However, the LTAEL defined in the plan was not updated during the remake.
3. The model underpinning the 2016 plan has undergone further improvement by updating representation of inflows and including Paterson River and Williams River systems. This

model has been internally reviewed and has been used in several published studies, but the model build has not been externally reviewed.

The current conditions model is based on the updated post-2016 model and also has not been externally reviewed.

The updated post-2016 model has lower inflows than both earlier versions of the model. This means that the current conditions model has a different representation of inflows compared to the model which was used to set the LTAEL in the plan. The scenario model selection criteria identifies that the models should have consistent hydrology, hence this is a limitation that needs further consideration in future assessments.

Table 1: Scenario models selected for Hunter Regulated River Water Source for LTAEL assessment purposes

Scenario model	System file
Current conditions	HuntPatW_CC_IQQMv7916.sqq

LTAEL compliance results

LTAEL

The LTAEL for Hunter Regulated River Water Source is 217 GL/yr. It is based on the modelled long-term average annual extractions using the Water Sharing Plan scenario model over the duration of climate record available at the time of formulation of the Water Sharing Plan in 2003. The LTAEL in the Hunter Regulated River Water Source has been established allowing for water extractions to grow by 30% above the long-term average, and full use of all access licences (current at the time¹).

The LTAEL is comprised of several categories of modelled water use and all are reported in Table 2. It should be noted that:

- The calculation of 217GL/yr included the Environmental Water Allowance (EWA).
- During the 2106 remake, use of water pursuant to EWA rules were excluded from the calculation of LTAEL and the current conditions (Section 40 (2) of the plan). However, the numerical LTAEL defined in the plan was not updated to reflect this.

There are also unmodelled extractions estimated at 5.5 GL/y². These unmodelled³ estimates have not changed and are not included in LTAEL compliance assessment.

Table 2: Modelled long term average annual extractions (1893-2013) underpinning established LTAEL (GL/y)*

Extraction category	Water Sharing Plan
Regulated general security	82
Regulated high security and Stock and Domestic	21

¹ These were the licences as they were in 1995, and which were contained in the late 1990s model

² Water requirements of holders of domestic & stock rights in accordance with sections 5(3) and 20 (1) (b) of the Water Management Act

³ Water Sharing Plan for the Hunter Regulated River Water Source requires system to maintain supply to the exercising domestic and stock rights via setting aside assured inflows in the reserves held in headwater public storages (Section19 (3) and (4)). These represented in the model as part of the reserves in Glenbawn and Glennies Creek Dams.

Extraction category	Water Sharing Plan
Supplementary access	44
Local Water Utility	14
Other fixed demand (EWA)	20
Major Utility (Power Generation)	36
Total modelled extractions	217

*The model is similar to the original used for the 2003 plan. It includes some significant updates inclusive of important software changes and updates related to representation of old and newly proposed rules. It still, however; has the higher inflows compared to the latest model. This model was adopted as the base case for WSP review (Hunter Interagency regional panel, Paper 1, NSW Government, 2014).

Compliance assessment

The modelled long-term average annual extractions from the current conditions model scenario are reported in Table 3. To enable like-for-like comparison with the Hunter's numerical LTADEL modelled current conditions annual extractions are averaged over the same long-term period.

Table 3: Modelled long term average annual extractions (1893-2013) for Current Conditions' scenario models (GL/y)

Extraction category	Current conditions
Regulated general security	59
Regulated high security and Stock and Domestic	10
Supplementary access	37
Local Water Utility	7
Other fixed demand (EWA)	20
Major Utility (Power Generation)	32
Total modelled extractions	165
Total auditable extraction (i.e., excluding EWA)	145

The key reason for differences between LTADEL and current scenario model results are:

- Lower extractions under current conditions due to allowance for growth in use and full licence utilisation applied when establishing LTADEL. Note: the EWA has been always modelled as fully utilised each year.
- Lower system inflows in the current conditions model compared to the model which was used to define the LTADEL. This inconsistency will be addressed during the next remake of the plan.
- Total auditable extractions excludes the EWA, but this was included in the LTADEL defined in the plan.

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

- Current condition extractions exceed LTADEL by 3% or more.

The results show compliance as current conditions extraction is below LTAEL extraction by 33.2%. Note there is still compliance, but less under-use, if the EWA is included in the current conditions results to enable better consistency with the LTAEL.

Compliance actions

No further compliance action is required.