

A report on compliance with water sharing plan limits for the Barwon-Darling in 2019/2020

Summary

The water sharing plan for the Barwon-Darling Unregulated River Water Source requires the assessment of compliance with a Long-term Average Annual Extraction Limit (LTAAEL) in Part 6, Division 1A. The LTAAEL is sometimes referred to as the 'plan limit'.

The assessment is to be carried out annually by the Department of Planning, Industry and Environment following the end of each water year and consists of a comparison of long term average annual diversions under Cap conditions, against the long term average annual diversions under current conditions.

There is non-compliance if the current conditions diversions exceed the Cap conditions diversions by more than 3% (see clause 35(2)).

Over the period 1/7/1895 to 30/06/2020, the modelled long-term average annual diversions under Cap conditions are 197,122 megalitres (ML)/year and the modelled long term average annual diversions under current conditions are 164,630 ML/year.

Extraction of water from the Barwon-Darling Unregulated River Water Source is therefore compliant with the water sharing plan limit and currently sits at 16% below the LTAAEL.

Discussion of the 2020 compliance modelling

Comparison to Sustainable Diversion Limit compliance

The annual compliance with Sustainable Diversion Limit (SDL) undertaken for s71 of the Basin Plan, found that the Annual Actual Take in the Barwon-Darling significantly exceeded the Annual Permitted Take in 2019/2020 water year.

This outcome has not been attributed to real growth in diversions, but rather:

- The installation of new diversion meters which read significantly higher than the previous metering fleet that the models were calibrated to replicate.
- The differences between modelled diversion embargoes to support Broken Hill's town water supply and the current use of temporary water restriction orders under section 324 of the *Water Management Act 2000* to address critical supply issues at Menindee Lakes.

The LTAAEL compliance process relies on a model-to-model comparison and so is not affected by the change in metering equipment or by the change in water restriction behaviours because the two models share an identical representation for this component. Further background information on the differences between SDL and LTAAEL compliance assessments can be found at:

www.industry.nsw.gov.au/data/assets/pdf_file/0016/400606/Extraction-limits.pdf

Why are the current conditions so much lower than Cap?

Most of this difference is attributable to inactive held environmental water entitlements in the model, which reflects the current pattern of use by environmental water holders.

Barwon-Darling Long-term Average Annual Extraction Limit



Water sharing plan compliance

Basin Plan compliance and Cap compliance is structured so as to not consider usage by entitlements held for environmental purposes, which is consistent with the objectives of both programs to limit consumptive water use.

NSW water sharing plans also have an objective to manage the relationships between holders of different classes of entitlement and in that context, does not consider the purpose of an entitlement holder, only that the diverted water against the entitlement is no longer available to other entitlement holders.

Entitlements held for an environmental purpose are able to be voluntarily registered as Licenced Environmental Water under Part 8 of the *Water Management Act 2000*, which has the effect of managing growth in use separately and removing those entitlements from the LTAAEL compliance process.

In the case of the Barwon-Darling, the Commonwealth Environmental Water Holder (CEWH) has requested that NSW not register its Barwon-Darling entitlements as Licenced Environmental Water. As such, NSW is required to include these entitlements in the LTAAEL compliance process.

As part of the 2020 LTAAEL compliance process, each held environmental water (HEW) entitlement was checked in the NSW Water Accounting System and no material usage has been recorded since purchase as HEW.

The most correct modelled representation of this pattern of usage behaviour is to remove the entitlements from the model to ensure that no modelled take against HEW entitlements occurs, and the current conditions model scenario has been configured accordingly.

In 2020-21 CEWH began to use HEW in the Barwon-Darling. The department will work closely with environmental water managers to incorporate a representative modelled behaviour in the current conditions model scenario for future LTAAEL compliance assessments. This will need to consider the levels of diversion recorded against the entitlements in the Water Accounting System and any available plans or strategies that environmental water managers intend to follow.

If it was assumed that existing HEW holdings were utilised at the full Long Term Diversion Limit Equivalence (LTDLE) rate of 30,359 ML/year, the equivalent level of current conditions take would become 194,989 ML/year. With this assumption, the valley would still be LTAAEL compliant.

In these circumstances, it is not expected that improved understanding of HEW usage will alter the LTAAEL compliance outcome. HEW entitlements are based on individual Cap share, which limits the overall ability of entitlement holders to grow activation levels in the Barwon-Darling above Cap levels.

Floodplain harvesting representation

The models used for this LTAAEL assessment do not include the revised estimates of floodplain harvesting, which are being made under the Healthy Floodplains program. This new modelling of floodplain harvesting is incomplete, however; current estimates indicate around 6 gigalitres (GL) of growth in long term average floodplain harvesting has occurred, compared to Cap conditions.

If we add this to the current conditions estimate, along with the LTDLE assumed usage of HEW, the current conditions total would be around 200,989 ML/year. While above the LTAAEL, this estimate would still be compliant. LTAAEL non-compliance only occurs if there is 3% growth above Cap; this would require a current conditions estimate of 203,036 ML/year.

When the floodplain harvesting modelling is complete, it is possible that the revised current conditions total diversions will become non-compliant with the LTAAEL, unless floodplain harvesting licences are issued.

Barwon-Darling Long-term Average Annual Extraction Limit



Water sharing plan compliance

However, non-compliance is not expected as the potential opportunities for floodplain harvesting growth in the Barwon-Darling are typically smaller than the other northern basin valleys. Floodplain harvesting in the Barwon-Darling is typically related to farms that were deliberately located to take advantage of access to high flows in specific locations.

These farms generally had mature infrastructure development by the time of Cap and have not changed significantly since that time. The Barwon-Darling does not share the same geomorphology feature of reducing channel capacity and spreading floodplain and wetland complexes at the downstream end of valleys, where most floodplain harvesting development has occurred in other valleys since the Cap.

Overall situation

In 2012 the predecessor to the current department was concerned that growth in use was occurring in the Barwon-Darling, as indicated by multiple years of apparent Cap compliance breaches.

To prevent growth in diversions, the existing ~580 GL of entitlements were eventually reissued at ~189 GL of entitlements, which represented an individual share of the long term Cap. Improved modelling of Cap conditions later found that the apparent Cap compliance breaches had not actually occurred, but the smaller entitlements based on individual Cap shares were retained.

Entitlements based on individual Cap shares make it inherently difficult for the Barwon-Darling valley to exceed compliance limits that are derived from the Cap framework. It is also the case that entitlement shares were issued to a number of small inactive entitlement holders, which is expected to suppress long term average diversions to slightly below Cap over the long term.

LTAEL compliance methodology

2019/2020 is the first year where a formal LTAEL compliance check has been undertaken and no existing procedures or processes were available to follow.

To minimise the risk that any assumed procedure could influence the compliance outcome, it was decided to use existing accepted model scenarios as much as possible.

The Cap (i.e. the LTAEL) scenario used was “LT92_30” that has previously been accredited by Murray-Darling Basin Authority (MDBA) for Cap compliance purposes (now lapsed) and was also used to inform Basin Plan development, and is currently the formal Baseline Diversion Limit scenario.

The climate data inputs were extended to 30/06/2020 using existing documented procedures also followed for annual Cap & SDL compliance processes.

The current conditions scenario adopted is the APT model scenario provided to MDBA in the now withdrawn Water Resource Plan submission for the Barwon-Darling. Reports describing this APT model scenario have been previously published through the development and submission to MDBA of the Barwon-Darling Water Resource Plan.

A work log to document the preparation of these LTAEL compliance figures has been recorded on the department’s project management system.

In addition to the work log, a draft LTAEL compliance design document has been prepared that identifies a number of principles and five actions to improve annual Barwon-Darling LTAEL compliance checks in future years.

Barwon-Darling Long-term Average Annual Extraction Limit



Water sharing plan compliance

This design document was necessary because LTAAEL compliance had not previously been undertaken directly, so a number of technical and detail issues had not been identified and resolved. The department will continue to design, build and publish a robust formal process for LTAAEL compliance in the future.

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