WENTWORTH GROUP
OF CONCERNED SCIENTISTS

Mr Peter Cosier, Prof Tim Flannery FAA, Dr Ronnie Harding FEIANZ, Dr Terry Hillman AM, Prof Lesley Hughes, Prof David Lindenmayer AO, Prof David Karoly, Dr Jamie Pittock, Prof Hugh Possingham FAA, Mr Robert Purves AM, Dr Denis Saunders AM, Ms Anna Skarbek, Prof Bruce Thom AM, Mr Martijn Wilder AM.

SUBMISSION ON THE NSW UPDATED FACTORS FOR WATER RECOVERY

The Wentworth Group welcomes the opportunity to contribute to the New South Wales Government's Consultation Paper on the 'NSW Updated factors for water recovery' and the Water reform technical report titled 'Derivation of LTDLE factors in NSW' published in May 2018.

What are LTDLE factors?

The primary role of long-term diversion limit estimate (LTDLE) factors is to assess the actual volume of water recovered for the environment under the Murray-Darling Basin Plan.

Water recovered for the environment is held in the form of water entitlements. There are over 150 different types of entitlements across the Basin with different characteristics such as location, reliability, management rules and levels of use.

The Australian Government must be able to determine when enough water entitlements have been recovered to achieve the Basin Plan's reduction volume over the long-term.

LTDLE factors allow different types of entitlements to be compared on equal terms using a common measure: the equivalent long-term average volume of water use.

For example, an average entitlement of 100 unit shares with an LTDLE factor of 0.8 would be expected to equate to 100 × 0.8 = 80 megalitres (ML) of water per year in the long-term.

2011 factors

The Murray-Darling Ministerial Council approved a set of factors in November 2011 in order to account for water recovery associated with the development of the Basin Plan. Known as 'cap factors', these related the volume of each type of entitlement purchased with the long-term average reduction in diversions.

2018 revision of factors

In 2015, all Basin government ministers agreed to update the original 2011 factors ahead of the accreditation of all water resource plans. This set of factors, known as Long-term Diversion Limit Equivalent (LTDLE) factors, relates the entitlements purchased to the volume of 'gap' that has been bridged to achieve the Basin Plan sustainable diversion limits (SDLs).

The proposed 2018 factors are considerably different from the previous factors used for environmental water recovery that were approved by the Murray-Darling Ministerial Council in November 2011. The proposed factors are an improvement over the 2011 factors in that:

- They are calculated by a consistent method;
- They are based on consistent diversion limits which were calculated over the same historic period (1895 to 2009) that was used to develop the Basin Plan; and
- The Baseline Diversion Limit (BDL) has been fully assigned to the different entitlement types i.e. the sum of the entitlements multiplied the factors equals the BDL. This did not happen with the previous factors.

Level 4, Plaza Building, Australia Square, 95 Pitt Street, Sydney NSW Australia 2000
Telephone: +61 2 9251 3811 Email: information@wentworthgroup.org ACN 128 963 431

However, the Wentworth Group has a number of concerns about the derivation of the proposed 2018 figures. In the following submission, we describe these issues and proposed actions to address such concerns.

Summary of issues and proposed actions

Issues	**Proposed actions**
1. Proposed 2018 factors are based on Baseline Diversion Limit (BDL) values that have known errors.	BDLs need to be revised to ensure that they are a true reflection of the diversion limits that applied before the recovery of water for the Basin Plan.
2. The method used to calculate the 2018 factors is inherently biased because it reduces the volume of low priority entitlements that the Commonwealth needs to purchase to bridge the gap.	LTDLE factors should be based on the expected utilisation rate over the horizon of the Basin Plan (up to 2026).
3. The method used to calculate the 2018 factors means that over the long-term, the reliability of water allocations for water entitlement holders is likely to decrease, triggering the potential for compensation payments by the Commonwealth.	LTDLE factors for low priority licences should be estimated after allowance has been made for the likely increase in utilisation of higher priority licenses.
4. LTDLE factors have not yet been independently reviewed.	LDTLE factors should be independently reviewed to ensure they are accurate and transparent.

NSW Government's proposed 2018 LTDLE Factors: Key issues and recommendations

1. Proposed 2018 factors are based on Baseline Diversion Limit (BDL) values that have known errors.

The BDL used for establishing the 2018 factors are not a true reflection of the diversion limit that applied before the recovery of water for the Basin Plan. The 2018 factors are based on the BDL values calculated by Run 871 of the MDBA Model. There are known issues with the BDL estimates derived from this model run. This requires revised BDL estimates which include:

- Finalisation and correction of water trade volumes;
- Finalisation and correction of The Living Murray (TLM) water recovery including reconciliation of water recovery that came from reducing river losses as opposed to reducing diversions;
- Finalisation of water recovery by the *Water for Rivers* program;
- The adjustment of the BDL for the *Water for Rivers* recovery by the entitlement volume recovered multiplied by the average reliability rather than the standard Cap factor. The average reliability should be used because the flow from the Snowy Mountains is reduced by the volume of water allocated to the recovered entitlement; and
- The final accreditation of the Cap model in some valleys including the Barwon-Darling.

Recommendation: BDLs need to be revised to ensure that they are a true reflection of the diversion limits that applied before the recovery of water for the Basin Plan.

2. The method used to calculate the 2018 factors is inherently biased because it reduces the volume of low priority entitlements that the Commonwealth needs to purchase to bridge the gap.

The 2018 factors are based on estimates of current rates of utilisation of allocations,[1] rather than estimates of the expected utilisation rate over the period of the Basin Plan (up to 2026). This approach is different to that used to develop the 2011 factors which where "developed to represent the ultimate diversion right associated with an entitlement, rather than its current usage."[2]

Utilisation of allocations have steadily increased in past years. Average utilisation rates across the Murray-Darling Basin increased from 63% in 1995[3] to around 75% in 2012.[4] There is no evidence to suggest that utilisation rates will not continue to increase over the life of the Basin Plan.

The implications of using current rather than assumed ultimate utilisation rates are that:

- Lower priority entitlements will have higher LTDLE factors;
- The volume of the cheaper, low priority entitlement that the Commonwealth has to purchase to bridge the gap will be reduced (in the short-term); and
- The impact on the irrigation industry will be reduced, in the short-term.

---

[1] "These factors are focused on historical patterns, they are not a prediction or a guide of future water use." https://www.mdba.gov.au/basin-plan-roll-out/factors-water-recovery

[2] MDBA, 2011. Review of Cap Implementation 2010–11. Report of the Independent Audit Group. Murray-Darling Basin Authority, Canberra, page 65.

[3] MDBMC 1995, An Audit of Water Use in the Murray-Darling Basin, Murray-Darling Basin Ministerial Council, Canberra. https://www.mdba.gov.au/sites/default/files/archived/cap/95_Audit_report.pdf, page 8

[4] MDBA 2016, Water Audit Monitoring Report 2011-12, Murray-Darling Basin Authority, Canberra, https://www.mdba.gov.au/sites/default/files/pubs/Water-audit-report-2011-2012-Aug2016.pdf page 18 based on the ratio of total diversions of 8,216GL to the sustainable diversion limit of 10,873GL.

If water used (or claimed to be used) by the environmental water holders is less, on average, than the long-term equivalent of the entitlement purchased, then the full environmental benefit that has been paid for will not be achieved.[2]

Recommendation: LTDLE factors should be based on the expected utilisation rate over the horizon of the Basin Plan (up to 2026).

3. The method used to calculate the 2018 factors means that over the long-term, the reliability of water allocations for water entitlement holders is likely to decrease, triggering the potential for compensation payments by the Commonwealth.

As a consequence of using current utilisation rates rather than predicted future rates, low priority supplementary access entitlements are allocated a share of the BDL equal to the current use. This means that too much water will be attributed to the purchase of low priority entitlements. Growth in water use at a valley scale is more likely to occur in such circumstances.

To remain within the SDL, a Basin state will need to respond by activating its 'growth in use' strategy. Typically this strategy will involve a gradual reduction in allocations to the lowest priority entitlements.

Third party holders of the remaining low priority entitlements (and possibly some higher priority entitlements) will have their reliability reduced by more than would have occurred if a more appropriate LTDLE factor had been used.

Subclause 74(4) of the Water Act 2007, states that *'A water access entitlement holder is entitled to a payment if (despite the Commonwealth's efforts) there is a reduction in, or a change in the reliability of, the holder's water allocations that is reasonably attributable to the Commonwealth's share of the reduction in the long-term average sustainable diversion limit (and if certain other conditions are met)'.*

The mechanism by which reliability would be affected is demonstrated by the following examples.

Table 1. Example of increased utilisation affecting reliability of third parties holding supplementary entitlements.

	Entitlement	Average Reliability	Current Utilisation	Current average usage	Cap Factor based on current utilisation	Entitlement recovered	LTDL recovered	Final Entitlement	Initial SDL Usage	Usage when utilisation increases to	Use Per Remaining entitlement
No Recovery										85%	
High Security	100	95%	32%	30	0.304		0	100	30	81	0.808
General Security	700	85%	67%	399	0.570		0	700	399	506	0.723
Supplementary	400			300	0.750		0	400	300	143	0.356
Total	**1200**			**729**			**0**	**1200**	**729**	**729**	
Recovery											
High Security	100	95%	32%	30	0.304		0	100	30	81	0.808
General Security	700	85%	67%	399	0.570		0	700	399	506	0.723
Supplementary	400			300	0.750	100	75	300	225	68	0.225
Total	**1200**			**729**			**75**	**1100**	**654**	**654**	

The top section of table 1 considers the case where no water is recovered but utilisation of entitlements increases from 32% and 67% to 85%. The 'growth in use' strategy is enforced such that diversion by supplementary access is reduced by the amount that the use by the other entitlements has increased. The average use by supplementary access reduces from 0.75 ML per ML of entitlement to 0.356. Because this reduction is due solely to the legitimate increase in use by higher priority entitlements, none of this reduction can be attributed to actions by the Commonwealth.

The bottom half of table 1 is the case where the Commonwealth has purchased entitlements with an LTDLE factor based on current usage. In this case the 'growth in use' strategy results in access to supplementary entitlements dropping to 0.225. It could be argued that the difference between

0.356 and 0.225 is a result of the Commonwealth reducing the SDL by more than the purchase of supplementary access warranted. There would be a case here for the Commonwealth to make a payment to third party holders of supplementary access.

Table 2 presents an example where the increase in utilisation by the higher priority entitlements is greater than the current use of supplementary entitlements.

Table 2. Example of increased utilisation affecting reliability of third parties holding general security entitlements.

	Entitlement	Average Reliability	Current Utilisation	Current average usage	Cap Factor based on current utilisation	Entitlement recovered	LTDL recovered	Final Entitlement	Initial SDL Usage	Usage when utilisation increases to	Use Per Remaining entitlement
No Recovery										85%	
High Security	100	95%	32%	30	0.304		0	100	30	81	0.808
General Security	700	85%	67%	399	0.570		0	700	399	478	0.683
Supplementary	400			130	0.325		0	400	130	0	0.000
Total	**1200**			**559**			**0**	**1200**	**559**	**559**	
Recovery											
High Security	100	95%	32%	30	0.304		0	100	30	81	0.808
General Security	700	85%	67%	399	0.570		0	700	399	446	0.637
Supplementary	400			130	0.325	100	33	300	98	0	0.000
Total	**1200**			**559**			**33**	**1100**	**527**	**527**	

In this case no payment need be made to supplementary entitlement holders as the 'growth in use' strategy would give them no access to water regardless of the recovery of water. However, third party holders of general security entitlements would be entitled to payment for their average access being 0.637 rather than 0.683.

If the LTDLE factors were calculated assuming that the utilisation were at ultimate maximum levels then no additional payments would be required but the cost of bridging the gap is likely to be initially greater.

Thus, the use of current rather than ultimate maximum utilisation rates in the calculation of LTDLE factors could result in:

- Adverse impacts from reduced reliability to third parties;
- Ongoing payments by the Commonwealth to redress reduced reliability; or
- A requirement for the Commonwealth to purchase more entitlement in the future to return reliability to the required levels.

Recommendation: LTDLE factors for low priority licences should be estimated after higher priority licenses to ensure they reflect likely utilisation.

4. LTDLE factors have not yet been independently reviewed.

The LTDLE factors and the methods upon which they are based need to be independently reviewed to ensure they are developed in a systematic, robust and transparent way. This will help ensure that accurate water recovery amounts will be achieved in the implementation of the Basin Plan. The consultation papers provide no discussion of utilisation rates or of the possible impacts on third party reliability, so full justification of the methods is required and information on the implications for all parties. Given the MDBA has been involved in the development of the NSW LTDLE factors, external independent reviewers should be sought, preferably with experience in preparing Cap audit reports.

Recommendations: LDTLE factors should be independently reviewed to ensure they are accurate and transparent.