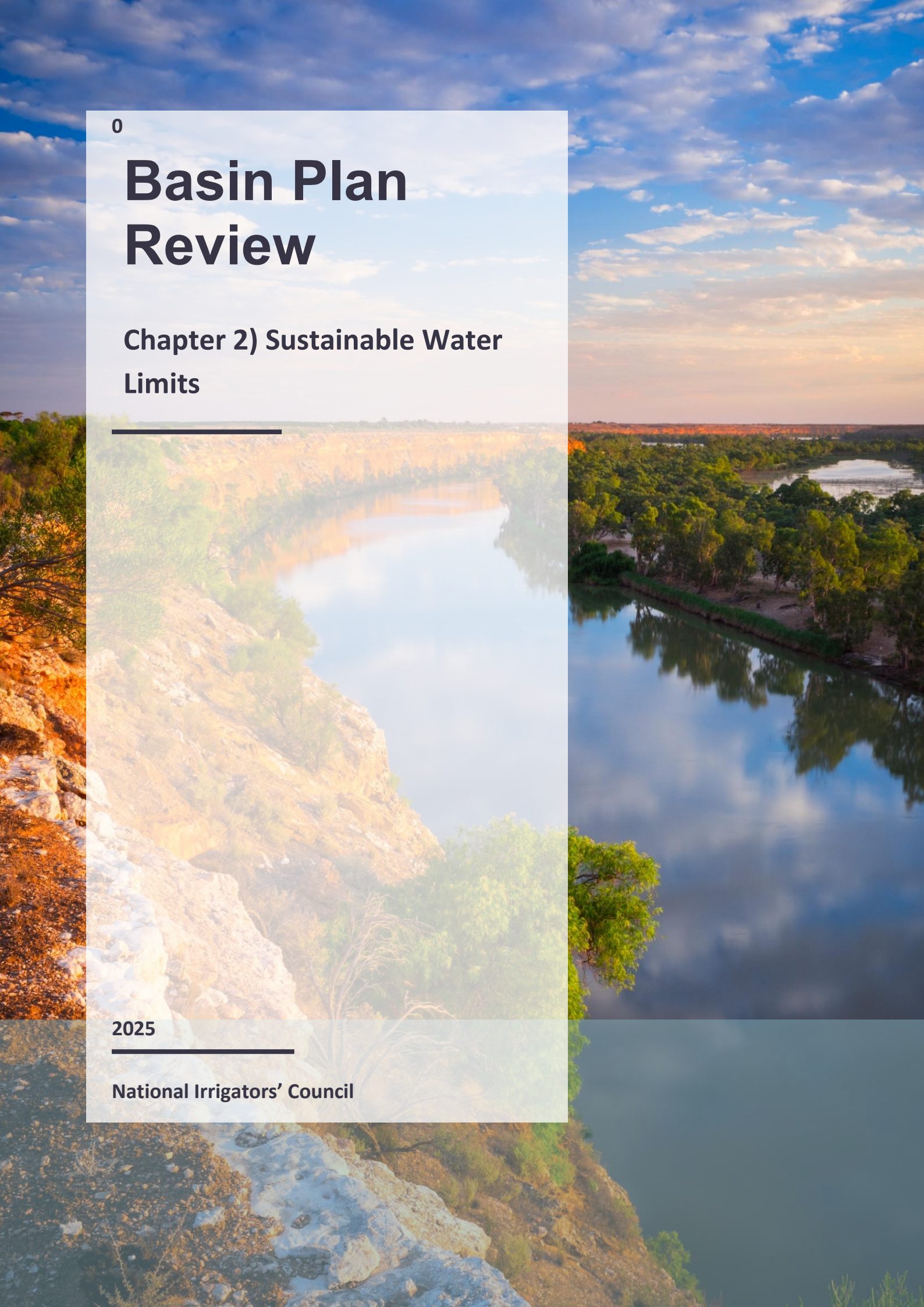

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Basin Plan Review

Chapter 2) Sustainable Water Limits

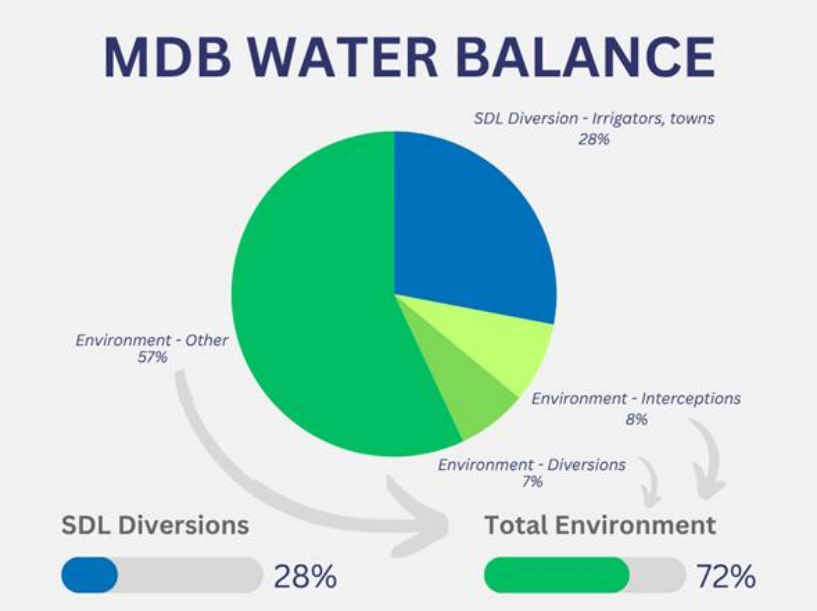
2025

National Irrigators' Council

Chapter Overview

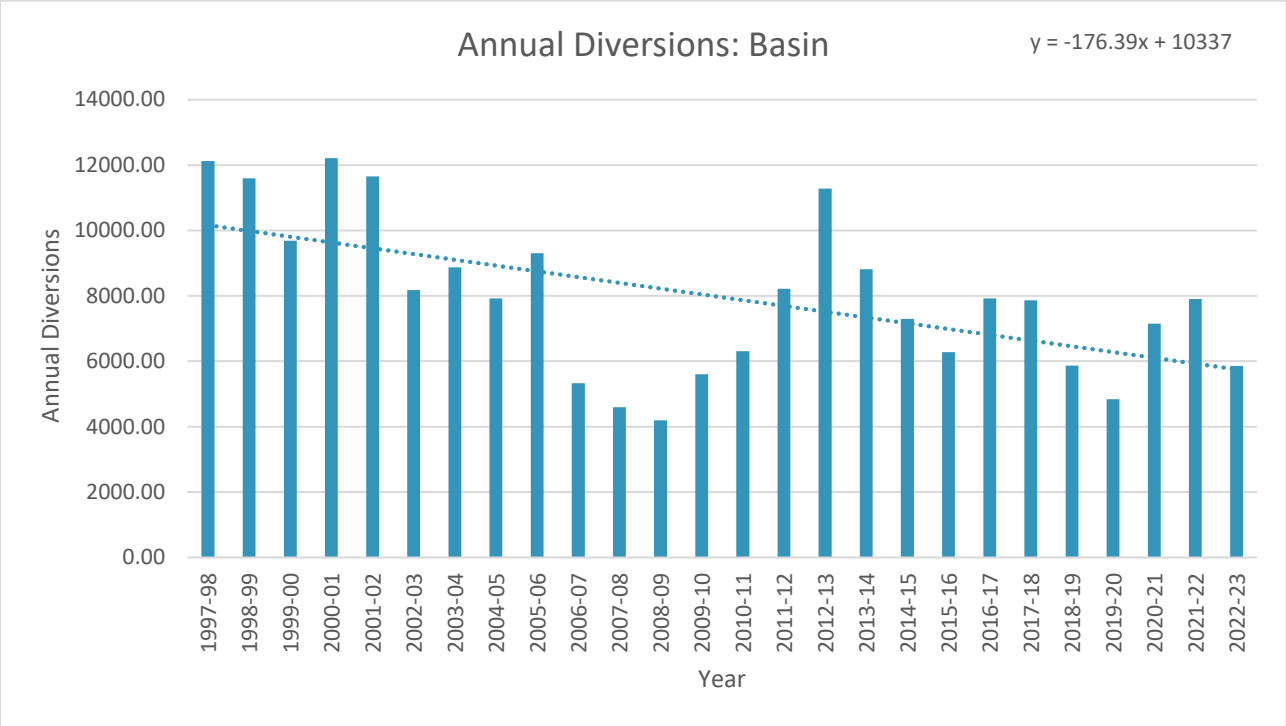
Key findings

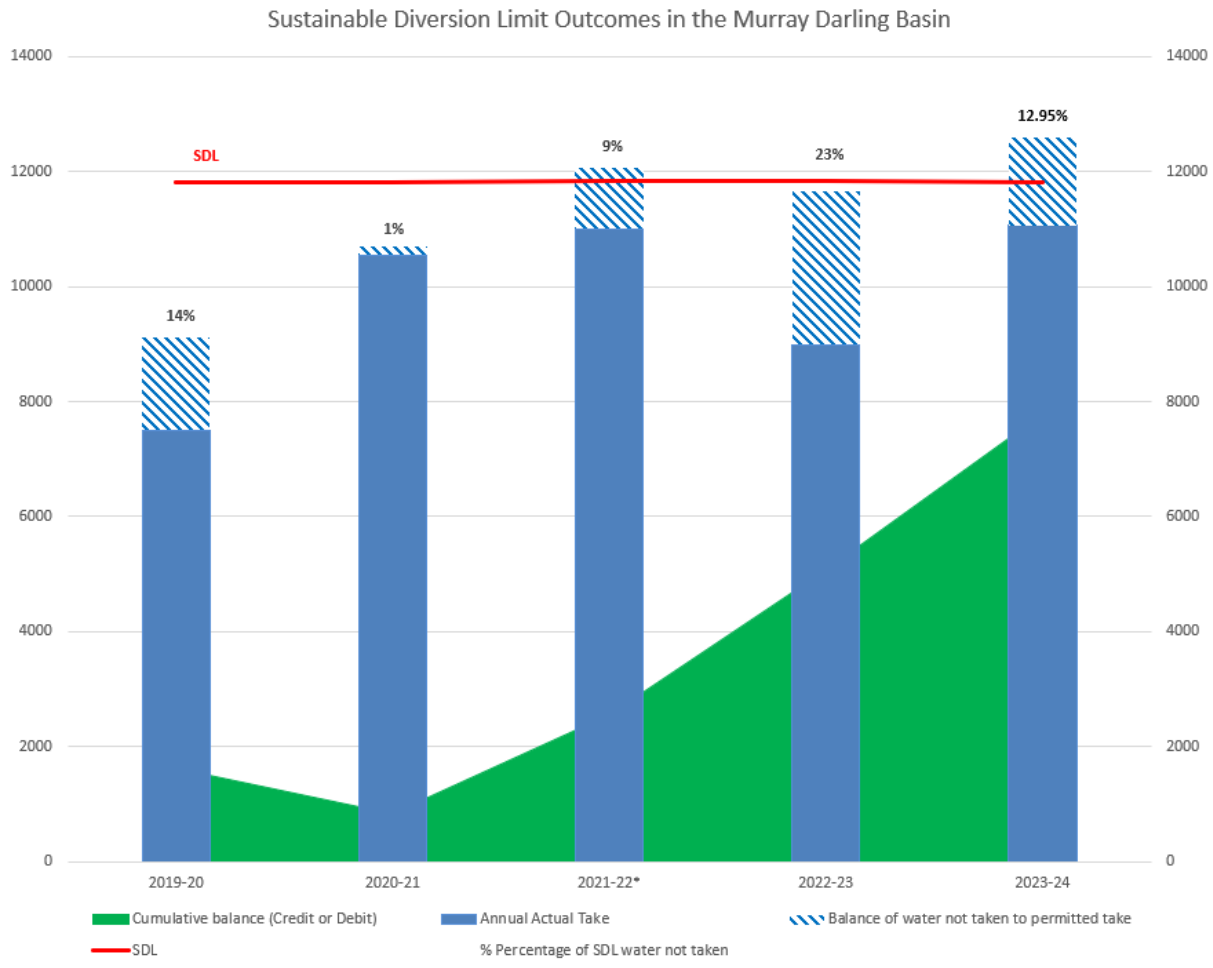
- There has been a significant decline in diversions in the Basin. Diversions in the Basin have, at most times, halved from pre-Plan levels. Diversions in the Basin are now 28% of inflows, well within global standards.



- Sustainable Diversion Limits (SDLs) have been established, and came into effect in 2019. Full compliance with SDLs* has been achieved.
- Water recovery to bridge the gap from the BDL to the SDL is largely complete (shared water recovery complete, local water recovery nearly complete).
- Combined with pre-Plan water recovery programs, there has been a transfer of nearly one-third of consumptive water entitlements to the environment.

The data


Annual Diversions: Basin
y = -176.39x + 10337
Annual Diversions
14000.00
12000.00
10000.00
8000.00
6000.00
4000.00
2000.00
0.00
1997-98
1998-99
1999-00
2000-01
2001-02
2002-03
2003-04
2004-05
2005-06
2006-07
2007-08
2008-09
2009-10
2010-11
2011-12
2012-13
2013-14
2014-15
2015-16
2016-17
2017-18
2018-19
2019-20
2020-21
2021-22
2022-23
Year


Sustainable Diversion Limit Outcomes in the Murray Darling Basin
14000
12000
10000
8000
6000
4000
2000
0
SDL
14%
1%
9%
23%
12.95%
2019-20
2020-21
2021-22*
2022-23
2023-24
Cumulative balance (Credit or Debit)
Annual Actual Take
Balance of water not taken to permitted take
SDL
% Percentage of SDL water not taken

What it means for the next Basin Plan

The Basin Plan has done its job in terms of addressing 'over-allocation', which was the core issue at the time of it's conception (during the Millenium Drought). In fact, combined with pre-Plan water recovery programs, there has been a transfer of nearly one-third of consumptive water entitlements to the environment. This means we can move forward with the limits we have, and onto to the next chapter of water management, beyond just water sharing and rebalancing, to look at how each share of water is managed.

Chapter 2: Sustainable Water Limits

History

There have been a series of reforms over time to limit the volume of water diverted from the Basin water sources, at both State and Federal level. These limits have reduced each time.

- **The Murray–Darling Basin Cap on surface water diversions** (**the Cap**) commenced in 1995 - this introduced long-term limits on how much water could be taken from rivers, and required Basin state governments to turn the long-term limits into annual targets (to consider variables such as weather conditions and water availability in each year). [1]
- **Sustainable Diversion Limits (SDLs)** commenced in 2019, as part of the Murray-Darling Basin Plan – this represent the maximum long-term annual average quantities of water that can be taken on a sustainable

[1] From 1997–98 compliance against the Cap is reported annually: Cap compliance reports | Murray–Darling Basin Authority
Note: Transitional sustainable diversion limits water take reports from 2012: Transitional sustainable diversion limits water take reports | Murray–Darling Basin Authority

basis from Basin water resources as a whole and from each management area. This involved shifting from the BDL (baseline), to the SDL, with the gap to be bridged via water recovery. The *Water Act 2007* requires an environmentally sustainable level of take (ESLT).

This chapter looks at 4 questions:

1. Has a reduction in diversions occurred in the Basin?
2. Is an enforceable SDL established and being complied with?
3. What is the current extent of diversions in the Basin, based on the SDL?
4. How has a reduction in diversions occurred?

i) Has a reduction in diversions occurred in the Basin?

Finding 2a) There has been a significant decline in diversions in the Basin. Diversions in the Basin have, at most times, halved from pre-Plan levels.

Trends of annual diversions

The MDBA reports that "*since the 2012–13 water year, when the Basin Plan was implemented, there has been a marked decrease in surface water take including interceptions, with more water remaining for environmental benefit at the Basin scale*"[2]. Figure 1 below shows the trend of declining annual actual take across the Basin from 2012-13 to 2022-23.

[2] 2022–23 Water Take Summary Report (P 2).

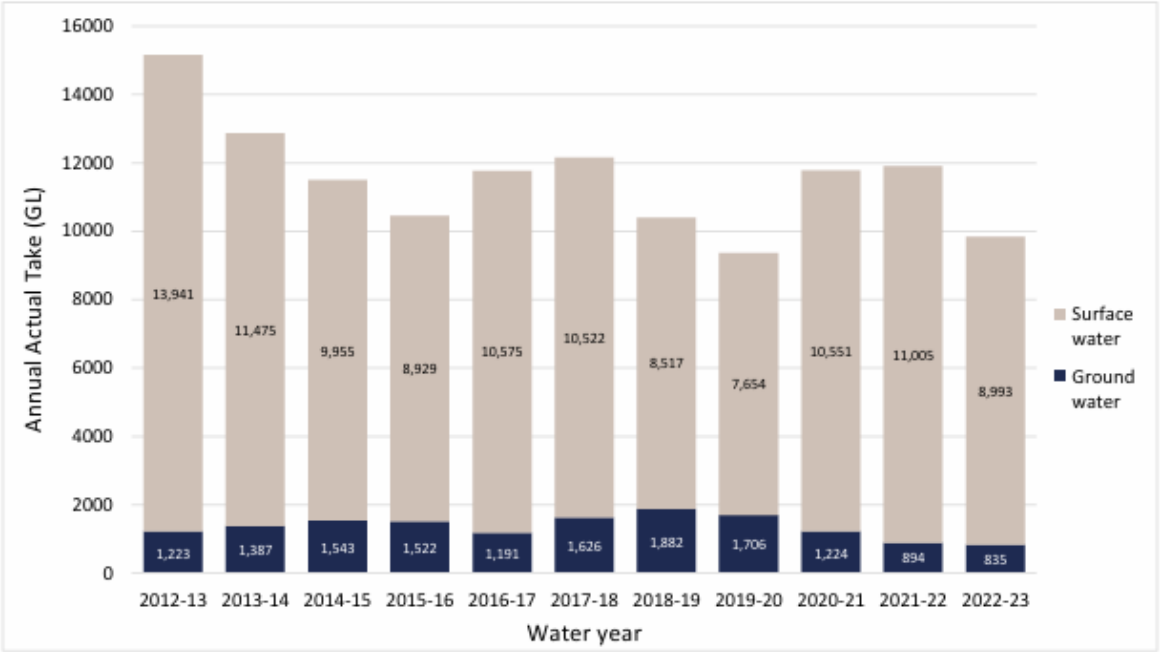


Figure 1 Surface water and groundwater annual actual take across the Basin, from 2012–13 to 2022–23 (source MDBA) [3]

This trend of decreasing diversions over time also goes much further back, as shown by the Cap Compliance Reports.[4]

The below section presents data from the most recent Cap Compliance Report (2022-23). Table 1 is excerpted from the report itself as the data source. The diagrams show the annual diversions in the Basin overall, as well as in key Basin states, over the period of time shown in the most recent Cap Compliance report (1997-98 to 2022-23). The columns show actual diversions for each water year (GL). The dotted line on each diagram shows the linear trend over this time period. The gradient of this line (shown in the equation at the top of each diagram, as the coefficient to the x), shows the direction and significance of the trend. A positive coefficient shows an increasing trend, and a negative coefficient shows a decreasing trend. The larger the number, the greater the rate of change.

[3] 2022–23 Water Take Summary Report (P 2).
[4] Cap compliance reports | Murray–Darling Basin Authority

Table 1: Annual diversions (source: MDBA Cap Compliance Report 2022-23)[5]

Table 4 Annual diversions (GL)

System	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
New South Wales																										
Intersecting Streams	3.31	3.31	3.31	3.31	3.31	3.31	3.31	3.31	3.31	3.31	3.31	3.31	3.31	3.31	3.31	3.31	3.31	3.31	3.31	3.31	3.31	3.31	5.80	5.80	5.80	3.00
Border Rivers	211.34	191.79	206.40	256.79	207.62	146.80	128.85	133.87	161.75	154.94	140.77	146.02	130.85	191.81	157.10	220.60	192.40	62.66	114.58	254.79	155.56	138.65	25.62	113.36	106.75	108.44
Gwydir	565.82	339.55	481.43	458.00	495.57	271.50	202.93	198.61	263.76	173.47	123.13	187.20	90.96	271.44	242.93	424.63	420.66	140.56	120.62	349.45	315.30	103.58	40.09	195.42	279.20	277.48
Namoi/Peel	340.02	357.22	384.96	389.67	398.40	328.78	208.07	225.08	269.03	200.92	176.68	223.05	204.77	269.90	245.49	399.81	405.49	188.34	164.31	331.18	311.99	173.64	97.26	203.16	236.76	300.52
Macquarie/Castlereagh/Bogan	442.28	395.76	437.44	521.53	596.73	411.20	218.66	102.47	224.15	252.16	74.54	105.61	112.06	182.52	266.65	456.43	292.12	114.49	131.47	211.39	375.89	223.59	95.23	138.51	224.31	188.70
Barwon-Darling/Lower Darling	269.53	431.75	263.64	492.87	204.32	126.90	292.40	186.07	199.41	17.17	221.20	159.26	150.28	124.06	166.37	283.94	180.01	73.58	84.16	306.66	96.42	11.70	238.62	202.19	228.16	127.81
Lachlan	428.97	293.22	300.59	423.16	457.15	252.99	58.89	36.45	127.66	66.01	46.30	40.23	25.74	90.14	204.51	343.23	240.73	187.79	166.53	186.36	326.40	267.54	86.02	99.38	161.87	105.74
Murrumbidgee	2585.48	2505.33	1874.87	2747.39	2347.98	1793.12	1775.49	1618.07	2200.29	960.15	514.77	602.07	909.94	1461.47	1719.77	2282.61	1833.60	1688.61	1321.03	1639.46	1646.15	967.20	545.82	1700.36	1556.95	1221.86
Murray*	1889.58	1999.66	1233.74	2069.66	2113.39	879.03	1311.51	1240.75	1667.22	601.53	243.62	341.01	439.32	689.09	1424.79	1934.39	1494.28	1272.42	714.38	1175.15	1289.89	653.04	384.32	974.85	1145.44	915.30
Total New South Wales	6736.34	6517.60	5186.38	7362.38	6824.47	4213.64	4200.10	3744.68	5116.57	2429.64	1544.31	1807.74	2067.23	3283.72	4430.93	6348.93	5062.60	3731.75	2820.38	4457.74	4520.93	2542.25	1518.77	3633.03	3945.24	3248.85
Victoria																										
Goulburn/Broken/Loddon Cap valley	1909.00	1698.51	1553.46	1568.79	1700.32	1075.63	1595.59	1552.81	1592.39	651.32	684.46	628.26	803.65	544.46	1009.77	1235.48	1165.29	1124.88	1080.56	733.53	1066.78	990.78	784.36	747.26	879.15	773.84
Campaspe	104.76	83.37	79.84	112.43	128.78	84.81	79.66	41.10	21.34	13.46	23.62	26.64	26.43	18.36	28.48	42.55	25.87	35.06	39.29	11.24	15.10	32.23	26.26	43.86	33.22	27.34
Wimmera-Mallee	184.07	159.47	103.15	67.87	83.85	60.48	66.41	49.69	60.19	18.68	44.79	11.45	9.02	9.72	14.21	17.66	15.52	19.34	19.82	14.01	16.56	18.29	17.41	17.37	17.03	14.67
Murray/Kiewa/Ovens Cap valley	1742.98	1803.74	1555.38	1712.00	1916.38	1754.69	1477.67	1492.91	1577.87	1406.28	800.53	837.39	970.57	563.00	1292.36	1674.26	1310.70	1399.81	1341.75	1145.81	1415.36	1355.04	999.68	1107.94	1138.32	878.04
Total Victoria	3940.81	3745.09	3291.82	3461.09	3829.33	2975.61	3219.34	3136.51	3251.80	2089.74	1553.40	1503.74	1809.66	1135.55	2344.83	2969.95	2517.38	2579.09	2481.41	1904.59	2513.80	2396.34	1827.71	1916.43	2067.72	1693.90
South Australia																										
Metropolitan Adelaide & associated country areas	153.09	152.88	138.71	103.63	82.45	164.70	82.07	71.61	73.90	203.08	89.45	149.50	56.90	56.44	59.03	81.67	42.14	73.19	153.34	34.67	71.07	157.61	113.38	131.41	107.86	64.18
Lower Murray swamps	91.90	91.32	90.19	89.81	90.39	89.30	67.72	55.47	61.22	28.77	14.67	10.17	14.30	13.60	13.99	18.03	15.58	15.67	17.18	12.85	15.18	18.16	16.99	17.96	17.40	5.14
Country towns	35.23	36.38	36.53	37.93	35.50	39.20	35.38	38.52	40.29	40.88	37.00	37.00	37.60	34.16	35.73	37.38	35.37	35.81	36.13	32.99	38.41	41.71	42.69	41.08	41.07	41.48
All other purposes	384.20	409.19	377.22	430.62	412.55	443.21	422.54	453.32	416.99	355.15	281.52	288.20	371.41	257.03	314.67	385.01	349.76	376.20	390.82	344.39	410.21	427.59	401.01	433.13	436.62	361.82
Total South Australia	664.42	689.77	642.65	661.99	620.89	736.41	607.71	618.92	592.40	627.88	422.64	484.87	480.21	361.24	423.42	522.09	442.85	500.87	597.47	424.89	534.87	645.07	574.08	623.57	602.95	472.62
Queensland																										
Condamine/Balonne	544.92	467.13	366.38	360.40	161.63	123.06	575.04	166.96	186.16	57.42	775.75	189.86	1049.32	1063.50	765.16	1004.77	611.07	354.08	265.17	561.64	160.94	178.59	733.79	577.31	1043.66	328.84
Border Rivers	185.67	123.18	162.70	288.14	163.29	77.95	203.74	191.65	124.66	70.78	209.71	156.72	122.30	420.84	209.68	378.37	145.71	102.90	89.45	520.31	90.88	69.86	108.28	370.83	198.16	97.31
Moonie	8.33	8.09	8.16	30.64	5.65	6.06	25.83	23.20	2.28	9.36	41.46	29.00	42.60	29.21	18.60	33.62	12.86	3.72	0.78	26.39	14.60	1.14	34.72	7.47	6.69	0.17
Nebine	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.17	0.11	0.09	1.00	0.15	1.00	0.00	0.00	0.08	1.40	0.00	0.00	0.08	0.04	0.03	4.64	0.00
Warrego	1.96	10.16	3.48	9.18	10.48	7.17	10.77	10.54	3.06	20.58	23.10	6.02	15.37	11.42	13.71	2.67	0.80	7.27	2.92	7.14	7.57	9.72	23.05	8.03	27.31	9.21
Paroo	0.04	0.04	0.03	0.03	0.00	0.00	0.10	0.06	0.04	1.99	4.01	1.02	1.57	0.06	0.03	0.03	0.04	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Queensland	740.92	608.60	540.76	688.38	341.04	214.25	815.47	392.40	316.28	160.29	1054.14	382.70	1232.16	1525.17	1008.19	1419.46	770.48	468.06	359.72	1115.49	273.99	259.39	899.88	963.67	1280.47	435.52
Australian Capital Territory**	44.21	29.40	26.47	33.74	36.52	40.11	27.82	27.12	27.80	25.06	15.59	18.66	17.61	6.55	8.49	18.66	18.76	16.99	20.10	16.28	21.59	22.99	22.57	10.98	2.77	5.76
Total Basin	12126.71	11590.45	9688.08	12207.59	11652.26	8180.02	8870.45	7919.63	9304.86	5332.60	4590.08	4197.71	5606.86	6312.22	8215.85	11279.09	8812.07	7296.76	6279.08	7918.98	7865.18	5866.03	4843.00	7147.68	7899.16	5856.64

Table 4 details actual annual diversions for each Cap valley. Diversions are calculated as defined in the Diversion Formula Register and include water taken or diverted, regardless of whether it originated from carry over, allocationsr or trade in from other valleys.

** 2012-13 NSW Murray diversion revised upward by 29.119GL as per the revised data.*

*** 2018-19 ACT diversion revised upward by 1.541 GL as per the revised data.*

[5] Murray–Darling Basin Cap register to 2022-2023

Graphical depictions of annual diversions (source: MDBA Cap Compliance Report 2022-23)[6]

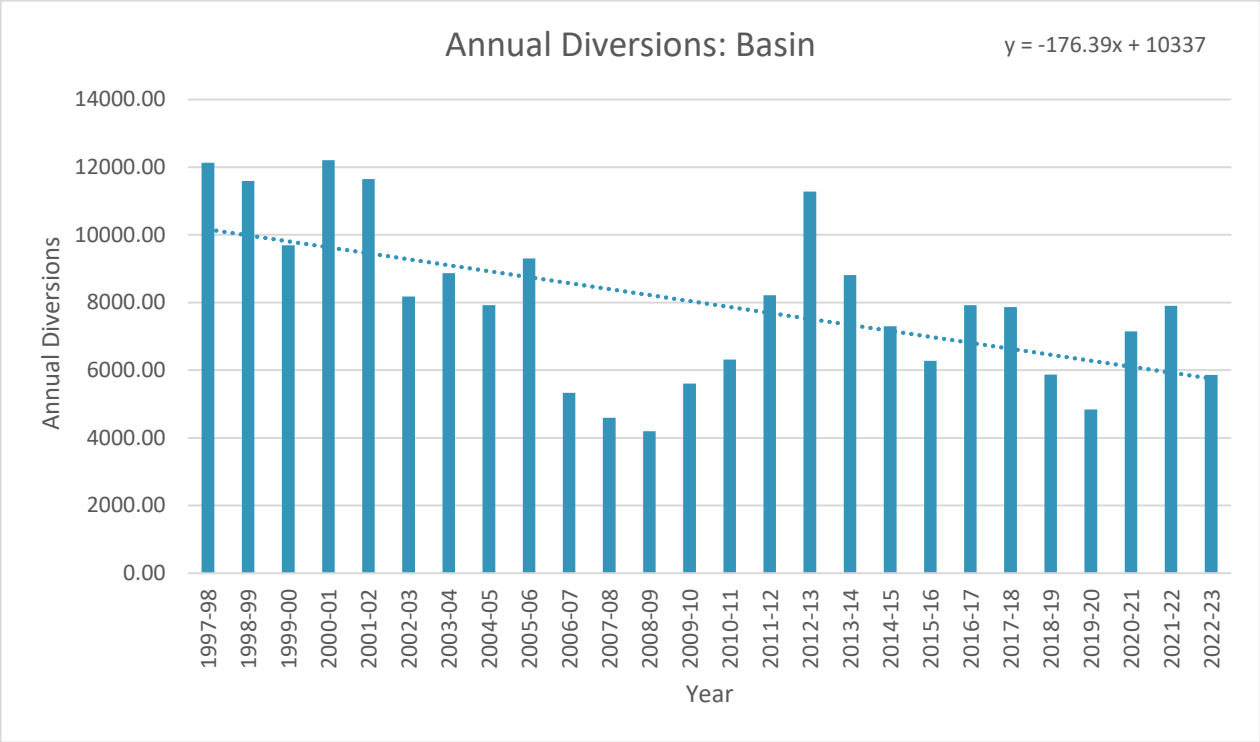


Figure 2 Annual diversions, Basin overall

[6] Murray–Darling Basin Cap register to 2022-2023

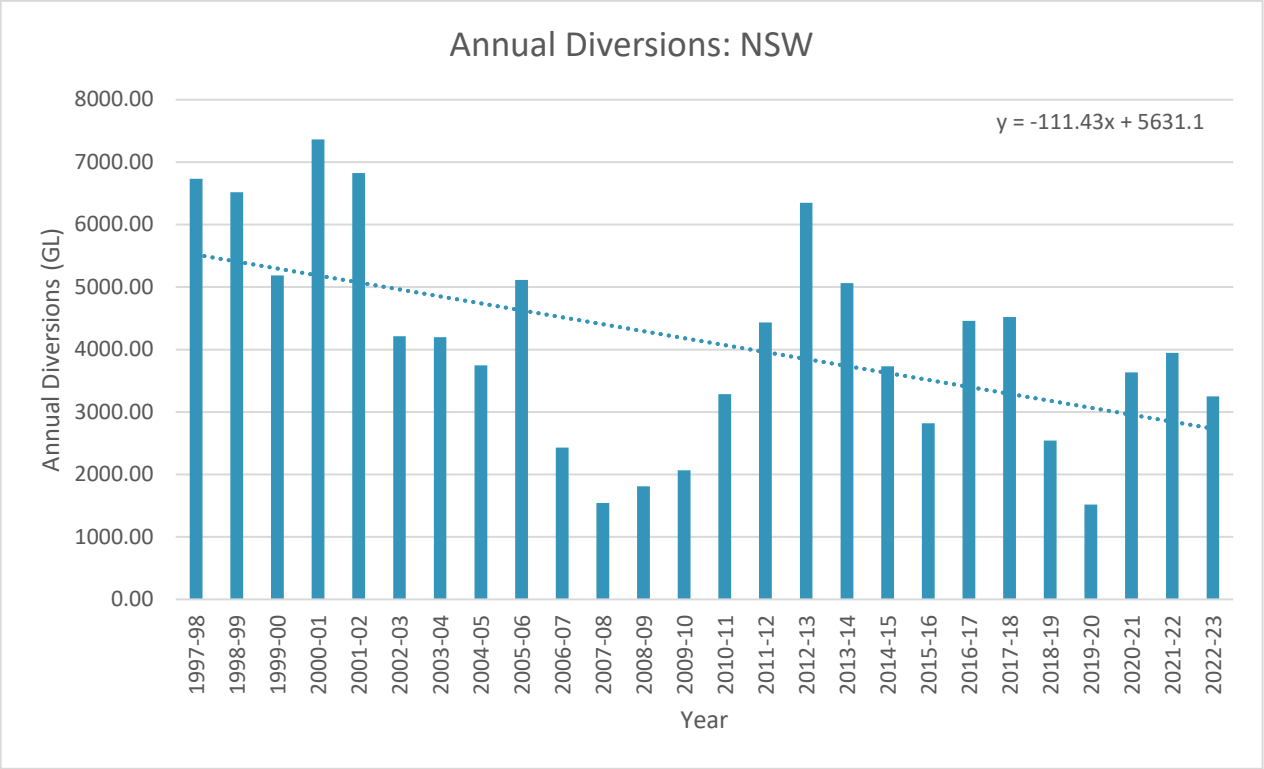


Figure 3 Annual diversions, NSW

Figure 4 Annual Diversions, Victoria

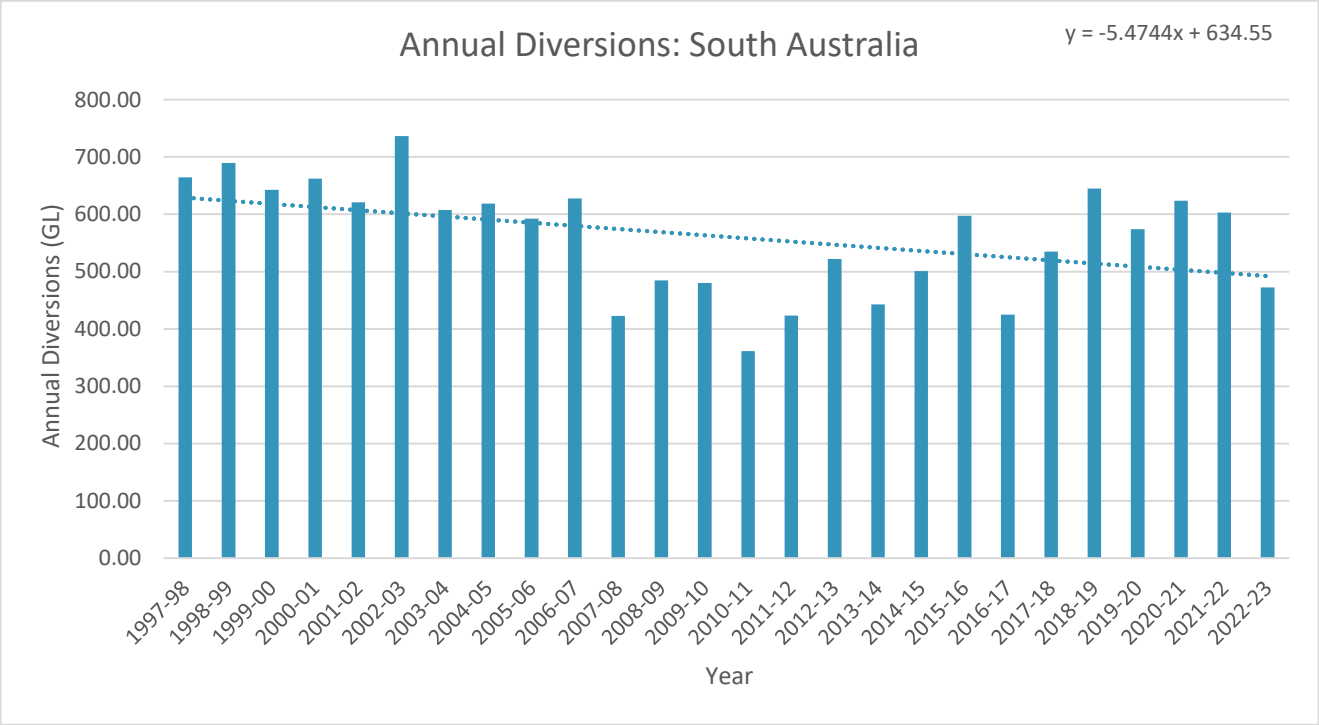


Figure 5 Annual Diversions, South Australia

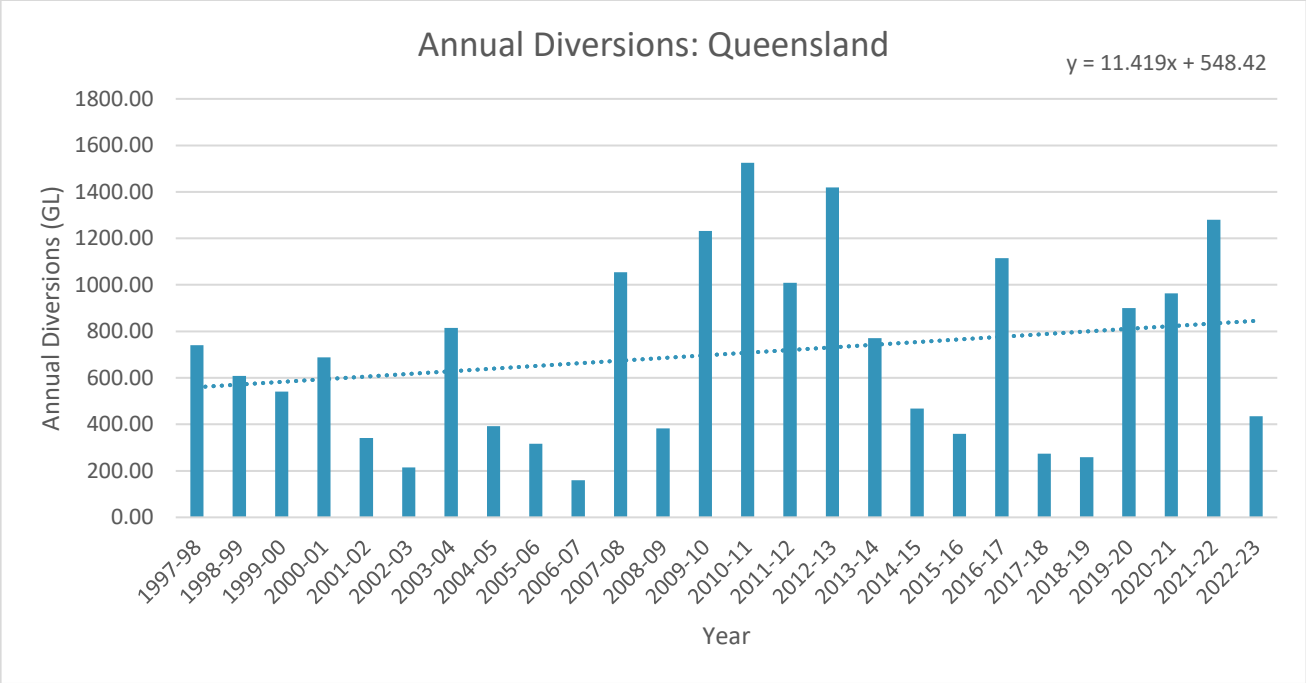


Figure 6 Annual Diversions, Queensland

The above figures show that annual diversions in the Basin (overall) have declined significantly. This also shows that annual diversions have declined very significantly in

NSW and Victoria, and significantly in South Australia. It is noted that there appears, on these graphs, to be an increase in diversions in Queensland, but this is believed to be due to the later MDB Cap date and significant changes in initial BDL estimates since that time – therefore not reflective of actual increases in take, but rather better information about water availability and access.

In addition to the gradient of these linear trendlines, we can also make point-in-time comparisons to calculate the percentage of change between key years. The selected years for this analysis are: 1997-98 (earliest year of data availability in this report); 2012-13 (commencement of the Basin Plan); 2022-23 (most recent year of data availability in this report).

Table 2: Point-in-time comparison of annual diversions – percentage change from 1997-98, 2012-13 and 2022-23

% Change	2012-13 to 2022-23	1997-98 to 2022-23
NSW	-48.83	-51.771
Vic	-42.97	-57.016
SA	-9.48	-28.867
QLD	-69.32	-41.219
ACT	-69.13	-86.971
Basin (overall)	-48.08	-51.705

Table 2 shows annual diversions in the Basin have seen a 48% decrease since 2012-13, and a 51.7% decrease since 1997-98, to the present, which is significant. However, it is recognised that there are limitations in point-in-time analysis (as the percentage change depends on the years selected, and the nature of water use and availability in those years).

It is recognised that further analysis would need to look to a rolling-average of annual diversions over selected time-periods, more consistent with SDL accounting.
Nonetheless, it is clear from the above data, and MDBA and others commentary, that there is a significant declining trend. In fact, SDL compliance reports highlight that many water resource areas are operating below limits, further driving down water diversions (see next section).

ii) Is an enforceable SDL established and being complied with?

Finding 2b) SDLs have been established, and came into effect in 2019.

SDLs came into force from 1 July 2019.

Under the Basin Plan, SDLs represent the maximum long-term annual average quantities of water that can be taken on a sustainable basis from (i) Basin water resources as a whole, and (ii) from each management area (a resource unit). SDLs apply to 29 surface water areas and 80 groundwater areas across the Basin.

The Basin Plan's SDL water accounting arrangements expand on the Cap to explicitly include reporting on water take from: watercourses, regulated rivers, groundwater, run-off dams, floodplain harvesting, commercial plantations, and basic water rights.[7]
It is important to note that the SDL is not a fixed number and changes over time, including as new information becomes available.

The latest estimates by the MDBA for the 2023-24 water year (calculated at 30 June 2024) are outlined below in Table 3.

Table 3: Current BDLs and SDLs (GL/y) for the Basin (data sourced from MDBA)[8]

[7] Limits on water use over time | Murray–Darling Basin Authority
[8] Murray–Darling Basin Sustainable Diversion Limits for 2023–24 water year Murray–Darling Basin Baseline Diversion Limits – estimates for the 2023–2024 water year

Area	Current BDL GL/y	Current SDL GL/y
Northern Basin (total)	4,110.0	3,790.0
Southern Basin (total)	9,117.3	7,371.3
Basin (total)	13,944.4 (11,317.5 from diversions; 2,626.9 from interceptions)	11,807.4

*See the source for the full data (including by SDL resource unit, as well as the 2012 BDL and SDL, and reason for SDL update).[9]

Finding 2c) Full compliance with SDLs* has been achieved

Compliance with SDLs is reviewed by the Inspector-General of Water Compliance (IGWC). The most recent report (published Sept 2023, for 2021-22), found that:

> *"The SDLs and compliance with these limits are essential to the implementation and operation of the Basin Plan. Under the Act, SDLs provide for the establishment and enforcement of environmentally sustainable limits on the volume of surface water and groundwater that may be taken from Basin water resources. In effect, SDLs are the amount of water that can be taken from rivers and aquifers for towns, industry, and farmers.*
>
> *I have reviewed the 2021-2022 Registers of Take as provided by the Murray-Darling Basin Authority (MDBA)1 and indicated in Table 1 and Table 2, and note all 55 SDL resource units in the registers of take are compliant (refer to Figure 1 and Figure 2). This is a positive result for Basin Plan SDL compliance for the second year in a row."*[10]

For NSW, until the finalisation of Water Resource Plans (WRPs), SDL compliance is reviewed by the MDBA. This occurs as a requirement of a bilateral agreement with the MDBA (implemented June 2020) to ensure key elements of the WRPs, including SDL

[9] Current diversion limits for the Basin | Murray–Darling Basin Authority
[10] Reviews and reports | Inspector General of Water Compliance

reporting and accounting, were given effect from 1 July 2019 where WRPs are not accredited by that date. The most recent assessments show:

"All NSW surface water SDL resource units are within SDL compliance limits for 2022-23. MDBA has published the 2022-23 interim Registers of Take for all NSW SDL resource units, and this shows compliance. There is further information at Sustainable diversion limit outcomes."[11]

Further details are available in the full SDL compliance reports and registers of take on the MDBA and IGWC websites. Full accreditation of NSW WRPs will ensure a common approach to reporting and monitoring. However, at this point in time, it can be said that SDL compliance has been achieved.

*It is noted that this is based off adjusted-SDLs for relevant resource units, assuming full implementation of projects.

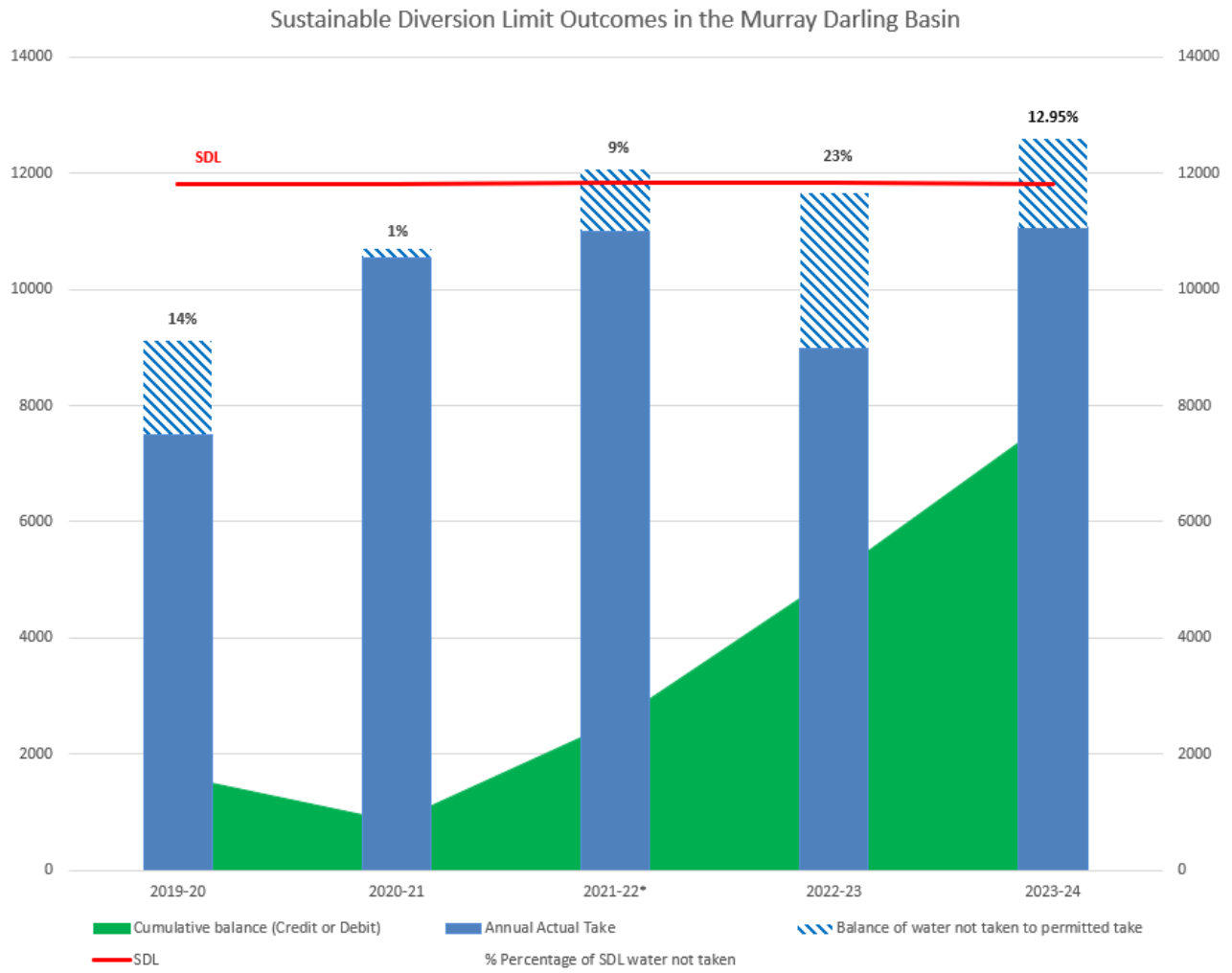
Trends of annual diversions against the SDL

The below figure shows SDL outcomes in the Basin, from 2019-20 to 2022-23. This is the full period of data available since the SDL commenced in 2019.

In this figure, Annual Actual Take (AAT) is shown in the blue columns – this is the amount of water which was diverted in that water year. The amount of water that can be taken each water year, in order to remain compliant with the long-term SDL, is known as Annual Permitted Take (APT). The blue-striped section of the column shows the gap from the AAT to APT. Put simply, this is the volume of water that could have been taken under the SDL, with the gap effectively showing 'underusage' against the SDL. The percentage of the water not taken under the SDL is marked. The green area shows the cumulative balance (credit or debit) of usage against the SDL.

[11] Tracking surface water extractions against extraction limits | NSW Government Water

The current SDL (based on the 2023-24 water year) for the total Basin is shown by the red line – it is noted that the SDL is not linear in this manner (this is included for context purposes only), and APT is the better indicator as shown.



This figure shows that water usage in the Basin is not only complying with SDLs, but actually tracking well below it. The percentage of the SDL that was not taken is indicated for each water year. For 2023-24, this was 12.95% of the SDL water not taken.

There are a number of complexities in SDL accounting, and showing diversions and SDL compliance in a simple figure requires recognising these limitations. It is acknowledged that:

i. SDL accounting is based on long-term rolling averages (with permitted take varying year to year against actual take), to account for 'unders and overs'. The SDL shown is 2022-23, consistent with the most recent data source.
ii. SDL compliance is managed at a water source scale (not Basin-wide), so this diagram is not intended for compliance purposes.

Given these limitations, the figure is intended to be used simply for the purposes of showing actual diversions in the Basin in the context of the Basin-wide SDL and illustrating a trend of underusage.

iii)What is the current extent of diversions in the Basin?

Finding 2d) Diversions in the Basin are now 28% of inflows.

To put these numbers in perspective, we need to consider these volumes of diversions in the context of the total water balance in the Basin. The Basin Plan legislation states that long-term annual surface water inflows into the Basin are 32,553 GL (noting this is an average, and the annual volume will significantly change between wet and dry years, along with the allocations of actual water on water entitlements). Note: the amount of water available to a water entitlement varies each year, based on the amount of water available, known as a water allocation.

This means the current SDL (inclusive of all uses, including interceptions) of 11,807.4 is 36.2% of those inflows (down from 42.8%). However, to show diversions specifically (i.e. excluding interceptions (BDL of 2,626.9 GL)), this means the SDL is approximately 28.2% of inflows, Basin-wide.[12] This includes all diversions, for agriculture, town water supply, and other industries. This is shown in Figure 11.

[12] Calculated as: SDL (11,807.4) minus interceptions (2,626.9) which equals 9,180.5 GL, divided by long-term annual surface water inflows (32,553).

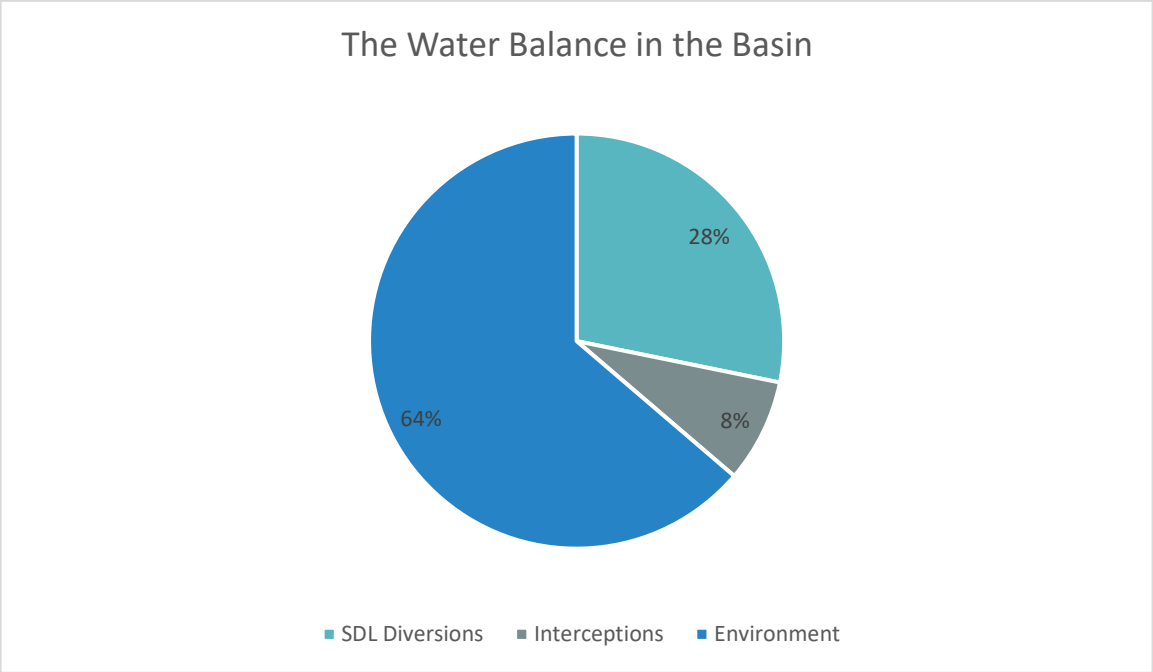


Figure 7 Water Balance in the Basin

Compared to other developed river basins globally, this is remarkably low, and well within global standards for acceptable levels of hydrological alteration.[13] Further, this balance is dynamic, varying between wet and dry years. In a dry year, water allocations to water entitlements are reduced, or even reach zero for lower-security entitlements. Given the hierarchy of water use, which prioritizes critical human water needs, town water supply, stock and domestic use, and critical environmental needs, above water for consumptive use – the proportion of diversions in a dry year maybe even less depending on rules to store water between years (carryover).

iv)How has a reduction in diversions occurred?

Finding 2e) Water recovery to bridge the gap from the BDL to the SDL is largely complete (shared water recovery complete, local water recovery nearly complete).

[13] Ecological Limits of Hydrologic Alteration (ELOHA)

Water recovery under the Basin Plan

The 'Bridging-the-Gap' target is the volume of water recovery that was estimated to be required to reduce water use from the BDL to the SDL. This total target was set at 2,075 GL/y.

To date (as of 30 September 2024), 2,132.7 GL/y has been recovered, exceeding this target. However, this total target is made up of both local and shared targets, and there remains 21.1 GL/y for some local recovery targets.

The below diagram from DCCEEW shows accumulated total water recovery by financial year with key targets.[14]

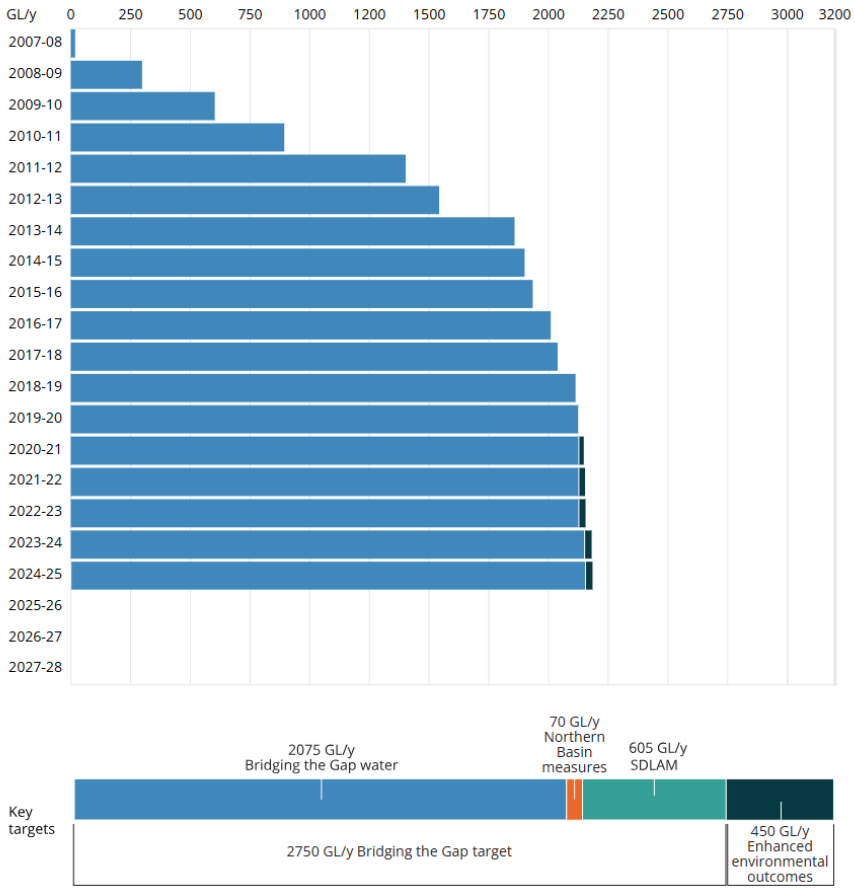


Figure 8 Accumulated total water recovery by financial year with key targets (source DCCEEW)

[14] Implementing the Murray–Darling Basin Plan dashboard - DCCEEW

What this shows, is that:

- Water recovery for 'Bridging-the-Gap' is largely complete (shared water recovery complete, local water recovery nearly complete).
- However, projects including SDLAM and the Northern Basin Toolkit are not yet fully implemented.
- Some purchases have occurred under the additional 450 GL/y, noting this is separate to bridging the gap from the BDL to SDL.

Earlier water recovery

In addition to water recovered under the Plan for the environment, there were also earlier water recovery programs. Together these comprise of 875 GL (which is factored into the baseline).[15]

- The Living Murray (program commenced in 2003) has a portfolio of 488 GL of water (long-term diversion limit equivalent). To date over 4,000 GL of water has been delivered.[16]
- Water for Rivers (191 GL)
- Cap to NSW WSPs (241 GL)
- Other state recovery (77 GL).[17]

The rebalancing of consumptive water licenses for the environment

The outcomes of this rebalancing can be shown in the percentage of consumptive water licenses in a water source that are now HEW.

Two case studies are selected below, based on data availability: NSW Murray and Murrumbidgee.

Water source	Environmental share of consumptive licenses 2010-2011	Environmental share of consumptive licenses 2023-2024
NSW Murray Reg	17.87%	26.74%
Murrumbidgee Reg	11.25%	31.70%

[15] Pre 2009 water recovery table
[16] The Living Murray – much achieved, much to do | Murray–Darling Basin Authority
[17] Pre 2009 water recovery table

What this shows is that now, 27% and 32% of water entitlements on issue are now for the environment, for these water sources respectively. This growth over time is shown below.

Note: this does not refer to the full water balance, rather, the percentage of consumptive license on issue, that are now HEW. This percentage is in addition to water not on a license (i.e. PEW), and therefore does not show the full amount of water for the environment that is depicted earlier in **Figure 7 Water Balance in the Basin**.

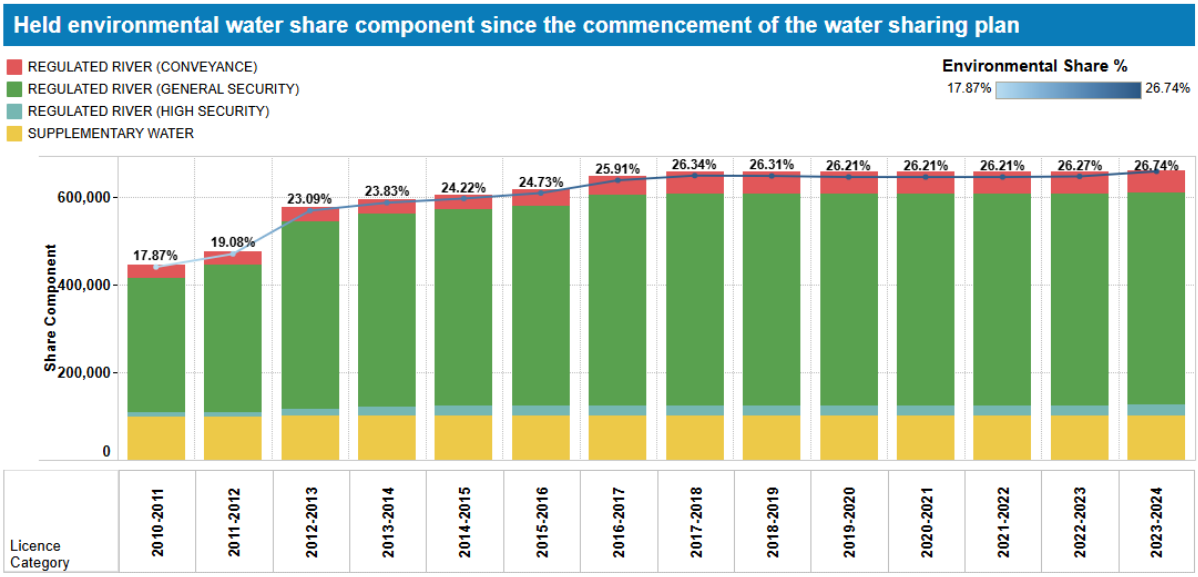


Figure 9 NSW Murray - growth of HEW

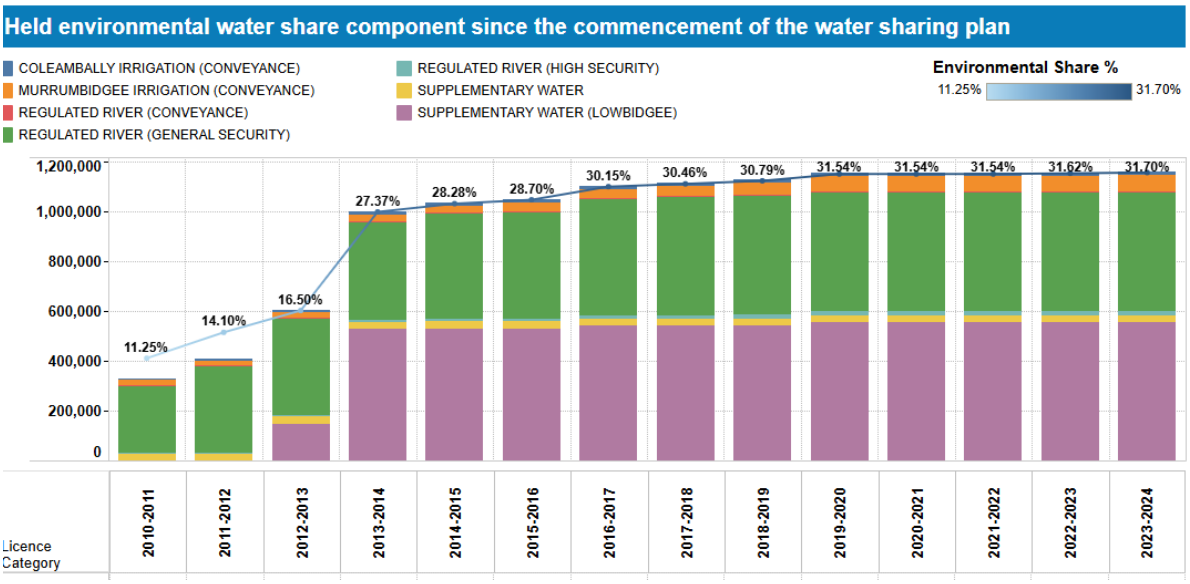


Figure 10 Murrumbidgee - growth of HEW

This data is consistent with the above calculation that approximately 1 in 3 litres of consumptive water has been returned to the environment.

Finding 2f) Combined with pre-Plan water recovery programs, there has been a transfer of nearly one-third of consumptive water entitlements to the environment.

v) SDL Adjustment Mechanism

SDLAM is included in this section due to the current construction of the Plan, linking these environmental projects to a volumetric equivalence, and adjusting SDLs.
However, in our view, SDLAM is a package of important environmental projects in their own right – about enhancing environmental outcomes – which should be separate to the objective of reducing water diversions.
These measures sit within Crown 2, as they are about optimising the outcomes from available water within the water sharing framework.

Background

Flexibility was built into the Basin Plan in 2017, through the Sustainable Diversion Limit Adjustment Mechanism (SDLAM) in the Southern Basin, which enables the SDL to be adjusted up or down by 5%[18]. The MDBA determined the same environmental outcomes under the Plan could be achieved with less water through a package of 'supply projects' (including constraints projects), offsetting the need for 605 GL to be recovered, so that it can remain in the consumptive pool for agriculture and other uses. The Plan also enables up to 450 GL of additional environmental water to be recovered via efficiency projects in exchange for water (note: the 450 GL was expanded to the full Basin following 2023 legislative amendments).[19]

[18] Note: at the time of the determination, the Basin-wide SDL was 10,873 GL, which meant an adjustment up or down by 543 GL.
[19] Note: In order for the full 605 GL to be achieved, a minimum of 62 GL of additional water savings through efficiency projects or additional held environmental water is required to pass the 5% rule (as 5% of the 2017 SDL of 10,873 GL was only 543 GL).

At the time of the original SDLAM determination, the Basin-wide SDL was 10,873 GL, so five percent of this is approximately 543 GL. Therefore, within the limits of change a minimum of 62 GL of additional water savings through efficiency measures or additional held environmental water is required to pass the 5% rule (i.e. from "the 450 GL"), and achieve the full effect of the 605 GL.

SDLAM is about more than just an offset

The supply projects (including constraints) are more than just an 'offset' they provide important environmental outcomes, such as ensuring environmental water can be delivered through the system. These outcomes cannot be achieved by just buying back more water – in fact – in many instances further water recovery is redundant if it cannot reach intended sites, or cannot be put to optimal use. The framing of SDLAM projects as simply an offset, with a burden of water recovery, has therefore been most unhelpful. The Constraints Roadmap[20] makes clear that the projects are about "realising the full benefits of public investment in water recovered for the environment". The Productivity Commission's five-year assessment of the Basin Plan[21] also made a number of points as outlined below:

"Achieving the Schedule 5 outcomes requires Basin States to ease or remove constraints to water delivery in the southern Basin, to allow river operators to meet increased demands from environmental water holders. Basin Plan modelling suggested that, if this does not occur, the extra water would have few additional environmental benefits."

"the modelling suggested that without easing constraints to allow higher flow rates, additional environmental water would have few additional benefits"

"If constraints projects are not implemented as expected, rushing to recover the full 450 GL by 2024 would risk the Australian Government spending hundreds of millions of dollars for an asset that (potentially) cannot be used

[20] Constraints Relaxation Implementation Roadmap
[21] https://www.pc.gov.au/inquiries/completed/basin-plan/report/basin-plan.pdf [P 21].

for some time. Aligning water recovery with progress in lifting constraints could potentially save the Australian Government up to $203 million."

"The 2012 Basin Plan modelling that underpinned the development of the Schedule 5 outcomes and the efficiency measures package made a number of assumptions that have since changed. In particular, the modelling suggested that without easing constraints to allow higher flow rates, additional environmental water would have few additional benefits. Since then, Basin States have developed proposals for constraints projects that will allow lower flow rates than those included in the 2012 modelling."

The environmental outcomes from SDLAM projects cannot be achieved through further reductions to SDLs (or more water). NIC calls for a shift in thinking, beyond 'just add water', and recognition that SDLAM projects – constraints and supply, are integral environmental projects needed to maximise Basin Plan outcomes.

Finding 2g) The environmental outcomes from SDLAM projects cannot be achieved through further reductions to SDLs (or more water). A shift in thinking, beyond 'just add water', is needed in recognition that SDLAM projects are integral environmental projects needed to maximise Basin Plan outcomes.

Current status

There have been a number of challenges with SDLAM projects (including poor community engagement, and low community support for some projects). This has resulted in the package of projects being behind the initial schedule and likely short of the agreed SDL offset.

Recent estimates (MDBA SDLAM 2023 Assurance Report) showed an estimated supply contribution of between 209 to 415 GL/y (assessed for delivery by 30 June 2024) – therefore a shortfall of 190-315GL/y (likely to be at the higher end of the range) from the 605GL/y contribution. Note: projects are assessed as a package, not on a project level.

[22]

Following 2023 legislative amendments (under the 'Restoring our Rivers' Act), the deadline for SDLAM project delivery was extended, and new projects can be included (until 30 June 2025), or existing projects amended or withdrawn (until 30 June 2026). The Restoring our Rivers amendments (more time and new projects) may mean this will likely change, but the extent of this is not yet known.

SDLAM Reconciliation

The MDBA have announced they will undertake a reconciliation process and determine revised sustainable adjustment limit amounts by 31 December 2026. This is despite the MDBA's Constraints Roadmap providing Governments with a recommendation for a new timeline for constraints measures within the SDLAM to be prioritised and extended beyond 2026 (and it being expected that supply projects also will not be completed). The MDBA have indicated this decision is on the basis that:

- The Restoring our Rivers Act enabled new supply measures as part of the package, these must be applied for by 30 June 2025 and operation by 31 December 2026.
- The Murray–Darling Basin Authority (MDBA) 2023 assurance report found some projects have changed since 2017 and others may be withdrawn.

[22] https://www.dcceew.gov.au/sites/default/files/documents/independent-assessment-murray-darling-basins-supply-constraints-measures.pdf

The process for this was published by the MDBA in the Sustainable Diversion Limit Adjustment Mechanism (SDLAM) Reconciliation Framework.[23]
In determining the final SDL adjustment amounts the MDBA will:

- Determine adjustments that will reflect: the notified measures, the additional supply measures, the additional efficiency measures and the additional held environmental water entitlements as expected on 31 December 2026 and the varying held environmental water contribution.
- Comply with the SDL adjustment limit - the '5 percent rule' and calculate for each affected SDL resource unit the difference between the 2017 SDLs and the current SDLs.
- Determine the amounts of the proposed adjustments for the water source and the Basin as a whole.

The amount an SDL is adjusted will reflect the sum of the apportioned supply contribution (as calculated during reconciliation), minus any efficiency or additional Held Environmental Water contributions for that SDL resource area as expected at 31 December 2026.

NIC Response: SDLAM (SDLAM)

NIC calls on Governments to stand by their commitment to SDLAM and its full associated offset (605 GL) and benefits beyond 2026.

Failure by Basin Governments to successfully implement SDLAM projects should not reduce water for agriculture or have any impacts on a water user or a Basin community. These projects are a government responsibility to implement.

The environmental outcomes from SDLAM projects cannot be achieved through further reductions to SDLs (or more water). The linkage of these projects to an equivalent volume of water is not helpful to the Plan, as it detracts from the important environmental outcomes these projects will deliver in their own right, and unnecessarily burdens communities/industry with what should be a State Government accountability.

[23] Sustainable Diversion Limit Adjustment Mechanism (SDLAM) Reconciliation Framework

Recommendations:

- MDBA to advise standing by commitments to SDLAM and its full associated offset (605 GL) and benefits beyond 2026.
- Develop an equivalent SDLAM Roadmap, aligned to the Constraints Roadmap, to support future implementation of projects. Governments must work collaboratively to fund and deliver these roadmaps.
- Do not undertake a SDLAM reconciliation in 2026 - It is premature (many highly valuable projects will need more time), and redundant (further water recovery is not an alternative to these projects). If a SDLAM Reconciliation is to occur, it must only occur following full project delivery, which means it must align with timeframes in the Roadmap.
- The environmental value of SDLAM projects is expected to be greater than initially modelled. Update methodologies to better recognise and account for this value.

Constraints Management

Relaxing constraints in the Murray–Darling Basin's rivers is part of maximising environmental outcomes using the water already recovered under the Basin Plan. The relaxation of constraints (physical and regulatory barriers to achieving higher river flows) enables controlled releases of environmental water at a higher flow rate, to move from the river to the floodplain, supporting riparian ecosystems. The periodic inundation of wetlands and floodplains adjacent to the river is an important environmental process - constraints relaxation is one method to achieve this.

The original Constraints Management Strategy was released in 2013. However, implementation by Governments has been very poor, and progress has been slow. This has included very poor consultation and communication with impacted landholders, limited access to information (such as the intended flow rates, extent and frequency of impacts at a property scale, and the adequacy of impact mitigation), poor governance, and funding challenges. This resulted in a significant loss of confidence in the program, and a significant trust-deficit particularly by those impacted. In 2023, as part of the

Restoring our Rivers Act (RoR Act), the Basin Plan was amended to require the MDBA to prepare a Constraints Relaxation Implementation Roadmap (the Roadmap) by 31 December 2024.

The Roadmap, now published, makes 12 findings, and recommended steps to move forward. The full Roadmap can be read here.2 Key findings include (but is not limited to):

- Successfully relaxing constraints across the Basin requires a 10-year program
- It is essential to continue to support the delivery of existing constraints projects where good progress is being made
- Governments need to ensure impacted landholders are genuinely involved in the design, delivery and operation of constraints relaxation projects
- The contribution of constraints relaxation to Basin Plan outcomes should be, if possible, recognised through reduced water recovery.

Anticipated environmental benefits

The Murray Darling Bain Authority's Constraints Roadmap outlines the anticipated environmental benefits of the projects:

What the science says

Constraints relaxation would result in:

- Significantly greater extents of wetland inundation – for the Murray River (Hume Dam to Wentworth), there could be up to 97% increase in the area of wetlands inundated[4] and nearly two-thirds of floodplain wetland habitats could be inundated in the Mid-Murrumbidgee[5].
- Up to 294% increase in the area of native vegetation that can be reached by environmental flows in the Murray (Hume Dam to Wentworth)[6].
- A 114% increase in river red gum forests and woodlands remaining healthy during drier years in the Murrumbidgee[7].
- An increase in long-term average golden perch populations by up to 29%, and minimum populations by up to 45% during dry periods in the Murray River (Hume Dam to Wentworth)[8].
- The inundation of 2 and half times more water dependent vegetation communities in the Goulburn[9].
- A 572% increase in area of river red gum in good or moderate condition in the Goulburn, subsequently protecting 6,000ha of the species[10].
- Improvements to in-stream productivity with increasing level of constraints relaxation[11].
- Up to 247% increase in the total vegetated area inundated on the South Australian Floodplain[12].
- Up to 11,727 ha and over 60% of river red gum watered on the South Australian Floodplain[13].

NIC Response: SDLAM (constraints projects)

NIC supports the Constraints Roadmap in-principle, noting the initial timeframes were unrealistic. More time and ongoing funding is needed to define a package of community supported projects[24] to improve the utilisation of environmental water and maximise the benefits of water recovered from the Murray Darling Basin Plan. These benefits cannot be achieved through more water.

NIC recognises constraints projects will have impacts on individuals and communities which must be minimised, mitigated and compensated with their consent.
Noting NIC's position that all projects must be community-supported, impacted landholders and communities must have access to sufficient, timely information about increased flow events, to make informed decisions and mitigate impacts.
NICs support for the Constraints Roadmap is contingent on maintaining the full 605 GL offset for SDLAM. This means there must be no reductions to SDLs prior to project delivery, which will require aligning the SDLAM Reconciliation Framework to the new timeframes of the Constraints Roadmap.

Constraints project implementation is the responsibility of Basin Governments. Communities should not be burdened with water recovery because of Government's failure to implement.

Recommendations:

- There must be no reductions to SDLs prior to project delivery, which (at minimum) will require aligning the SDLAM Reconciliation Framework to the new timeframes of the Constraints Roadmap.
- Ask the question if further reductions to SDLs is actually required, at least as a priority at this point in time, and consider preserving current SDLAM-adjusted SDLs in the Southern Basin, as the ongoing SDL, with constraints and other complementary measures projects progressing

[24] Note: The Constraints Roadmap outlines a clear policy intention to deliver flows up to a maximum of minor overbank flow levels for short durations, to deliver environmental water. This commitment must be strictly adhered to, in respect of those impacted.

separately. This moves away from the notion of 'volumetric equivalence' to these projects having important environmental merit in their own right.

Chapter Conclusion

NIC supports the core of the Basin Plan, to establish enforceable Sustainable Diversion Limits (SDLs), and improve environmental outcomes. It will be important for the Review to recognise just how much has changed in terms of diversions in the Basin, and celebrate the successes of now establishing, and achieving compliance with, SDLs.

Based on the Triple Crown of Water Reform Framework (see Chapter 1), we believe 'Crown 1' Flows has been achieved, and this outlines a compelling case to move to the later stages of water reform.