

## FACT SHEET

# SFE State Water Lachlan Index

The SFE State Water Lachlan Index includes four State Water storages in the Lachlan Valley - Wyangala Storage near Cowra, Carcoar Storage, Lake Brewster and Lake Cargelligo. The following table sets out the capacities of these storages.

Storage	Capacity (ML)	Active Capacity (ML)	Inactive Capacity (ML)	Percentage of Total Index
Wyangala	1,217,761	1,217,033	728	97%
Carcoar	36,131	35,917	214	3%
Cargelligo	35,900	29,550	6,350	0%
Brewster	153,000	148,450	4,550	0%
<b>Total</b>	<b>1,442,792</b>	<b>1,430,950</b>	<b>11,842</b>	<b>100%</b>

The proposed SFE State Water Lachlan Index only includes Wyangala and Carcoar. Lake Cargelligo is not included as this storage is primarily a re-regulation storage and does not really reflect water availability. However, Lake Brewster is not in the current proposal, this storage does add to water availability in the valley and changes in its storage are reflective of seasonal conditions. **State Water is seeking comment on whether Lake Brewster should be included in the Index.**

The 'Capacity' is the volume of the storage at full supply level. The 'Active Capacity' is the volume of storage between the full supply level and the lowest outlet works. The 'Inactive Capacity' is the volume of storage below the lowest outlet works that is normally not available.

### The Methodology to Calculate the SFE State Water Lachlan Index

The SFE State Water Lachlan Index is calculated each day as the sum of the active storage, in each storage, divided by the total active capacity.

$$\text{SFE State Water Lachlan Index} = \frac{\text{Sum of the active storage volumes}}{1,430,950\text{ML}} \times 100\%$$

The 'active storage volume' is the volume on the day less the inactive capacity. When any storage drops below the inactive capacity, that active storage is said to be zero. This may occur in droughts when the active storage is emptied and the remaining inactive storage continues to evaporate. When any storage exceeds the full supply level, the active storage is set to 100%. This occurs during floods when the storage 'surcharges' and flows begin over the spillway.

The Index does not have a direct correlation with the amount of water made available to irrigators. However, allocations are likely to be high when the Index is high and low when the Index is low.

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For more information contact State Water, REPLY PAID 1018, DUBBO NSW 2830

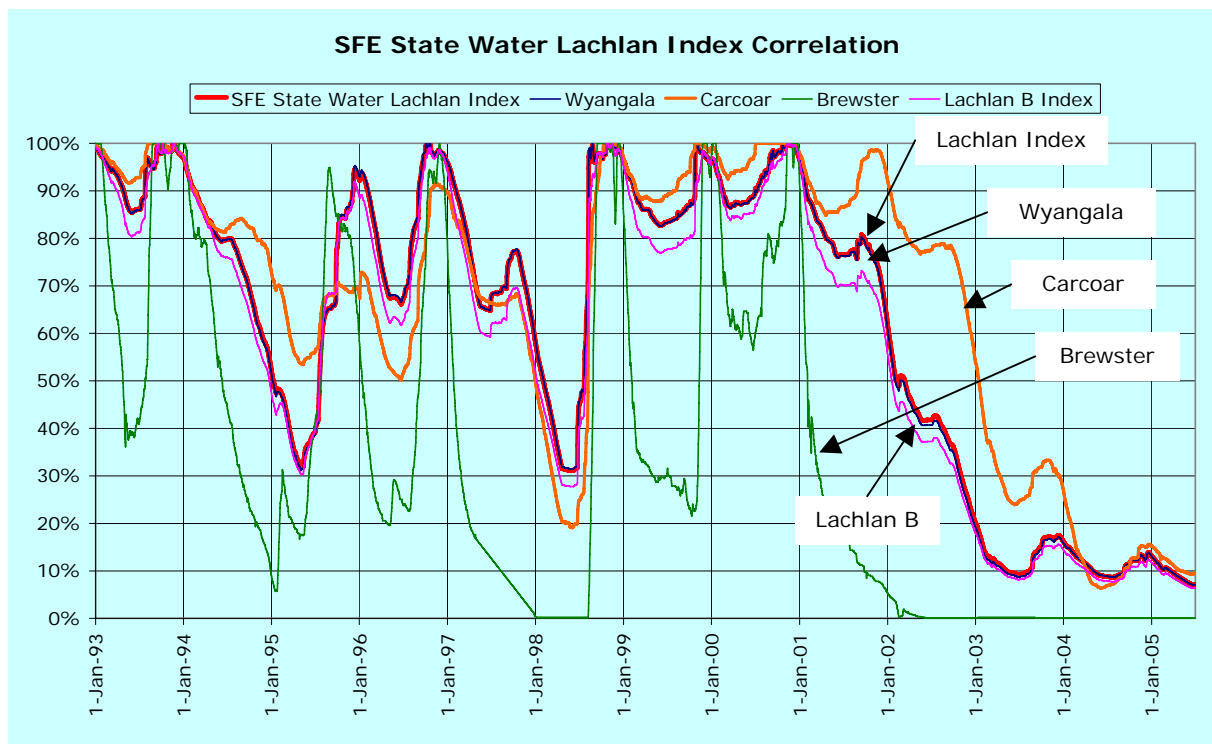
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The Index and any possible futures contracts do not represent the physical delivery of water or the use of water.

## SFE State Water Lachlan Index Correlation

The following chart shows the historic behaviour of the individual storages against the SFE State Water Lachlan Index over the period 1 January 1993 to 30 June 2005.

**Note: charts are best viewed in colour**



The chart shows:

- There were good climatic seasons between 1993 and 2001, with the exception of 1995 and 1998.
- There have been very poor climatic seasons since 2002.
- Carcoar Storage is operated for the Belubula Valley. Flows from the Belubula contribute to the Lachlan, but water is not made available from Carcoar Storage for the Lachlan Valley.
- Carcoar only contributes about 3% to the Lachlan Index, so large changes in Carcoar's storage do not have a big impact on the Index. However, Carcoar is in the same valley and seasonal conditions around Carcoar do reflect to the seasonal conditions in the wider valley.
- Water is not released from Wyangala to Brewster. Any water demands downstream of Brewster are supplied from Brewster when water is available, but supplied from Wyangala when Brewster empties. For example the demand in 1997 was supplied from

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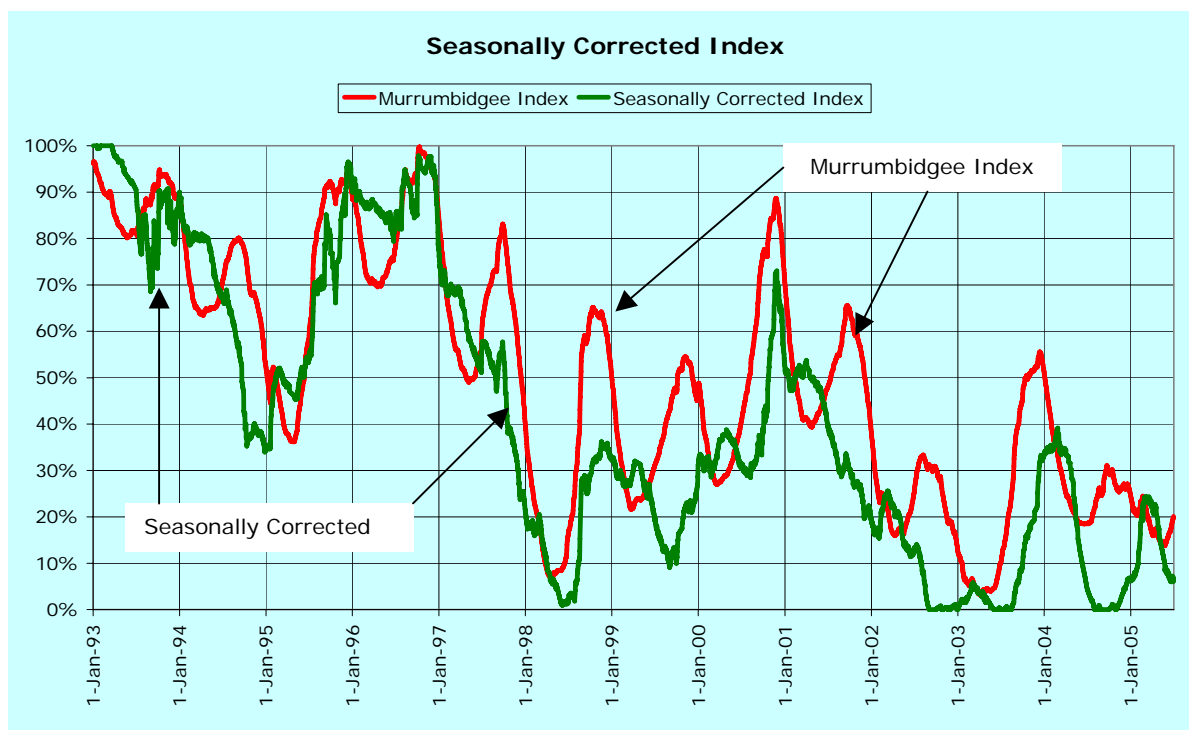
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both Brewster and Wyangala, so Wyangala fell by about 30%, while the following year all demand was supplied from Wyangala as Brewster was empty and Wyangala fell by 45%. These periods correspond with lower index values as both storages are depleting.

- A “Lachlan B Index” has been plotted on the chart above. This shows the Lachlan Index when Brewster is included in the Index. This index fell about 40% in 1997 and in 1998. This index may be a better reflection of the seasonal conditions and water availability for the valley.

## An Example of Seasonal Correction

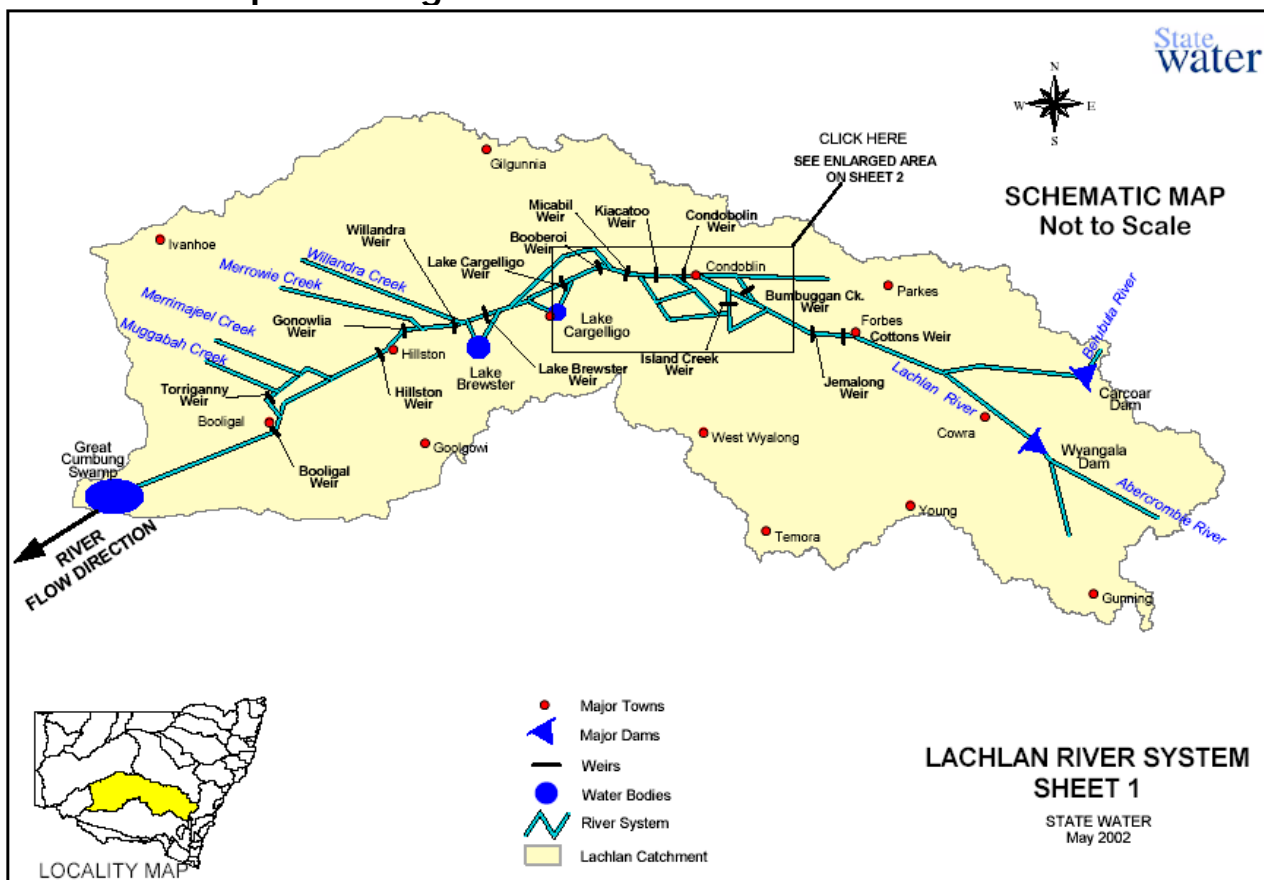
The following chart shows the Murrumbidgee Index and the Seasonally Corrected Index for the period 1 January 1993 to 30 June 2005.



- The red “Murrumbidgee Index” plots the combined storage of Burrinjuck and Blowering Storages, expressed as a percentage of the combined storage capacity.
- The green “Seasonally Corrected Index” ranks the storage index as a percentile exceedance for each day. The Seasonally Corrected Index tells whether the storage index is higher than normal (corrected indexes of above 50%) or lower than normal (corrected indexes of less than 50%).
- For example in late 1998 the storage index peaked at around 65%, while the Seasonally Corrected Index was about 35%. That is, in the latter months of the year a storage index of 65% is less than normal and quite low. This storage index ranks with only 35% of years expected to be lower than this.

- As a general rule when the storage index is high the seasonally corrected figures will also be high and when the Index is low so are the seasonally corrected figures.
- The figures for 1993 and 1996 are amongst the highest expected, with Seasonally Corrected Indexes of more than 90%. While 1998 and 2002 to 2004 have had periods as low as will ever be expected to be experienced, with Seasonally Corrected Indexes of zero%.
- There are some significant differences between the two indexes. There are some periods where the storage index rises and the seasonally corrected figures fall, and visa versa.
- In the period plotted above the storage index rises to some extent each winter, however the Seasonally Corrected Index falls in some winters. This occurs in 1994, 1999, 2001 and 2002. Although the storages were rising in these winters they were rising much less than average, primarily because these were drier winters. Therefore the Seasonally Corrected Index falls, showing that there were declining conditions in those winters.
- The Seasonally Corrected Index has the potential to communicate more information about the state of the regions seasonal conditions, that is whether it is much wetter or drier than average.

**Schematic maps relating to the Lachlan Index**



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