

Murray-Darling Basin System Flows

Managing Diversion Limits

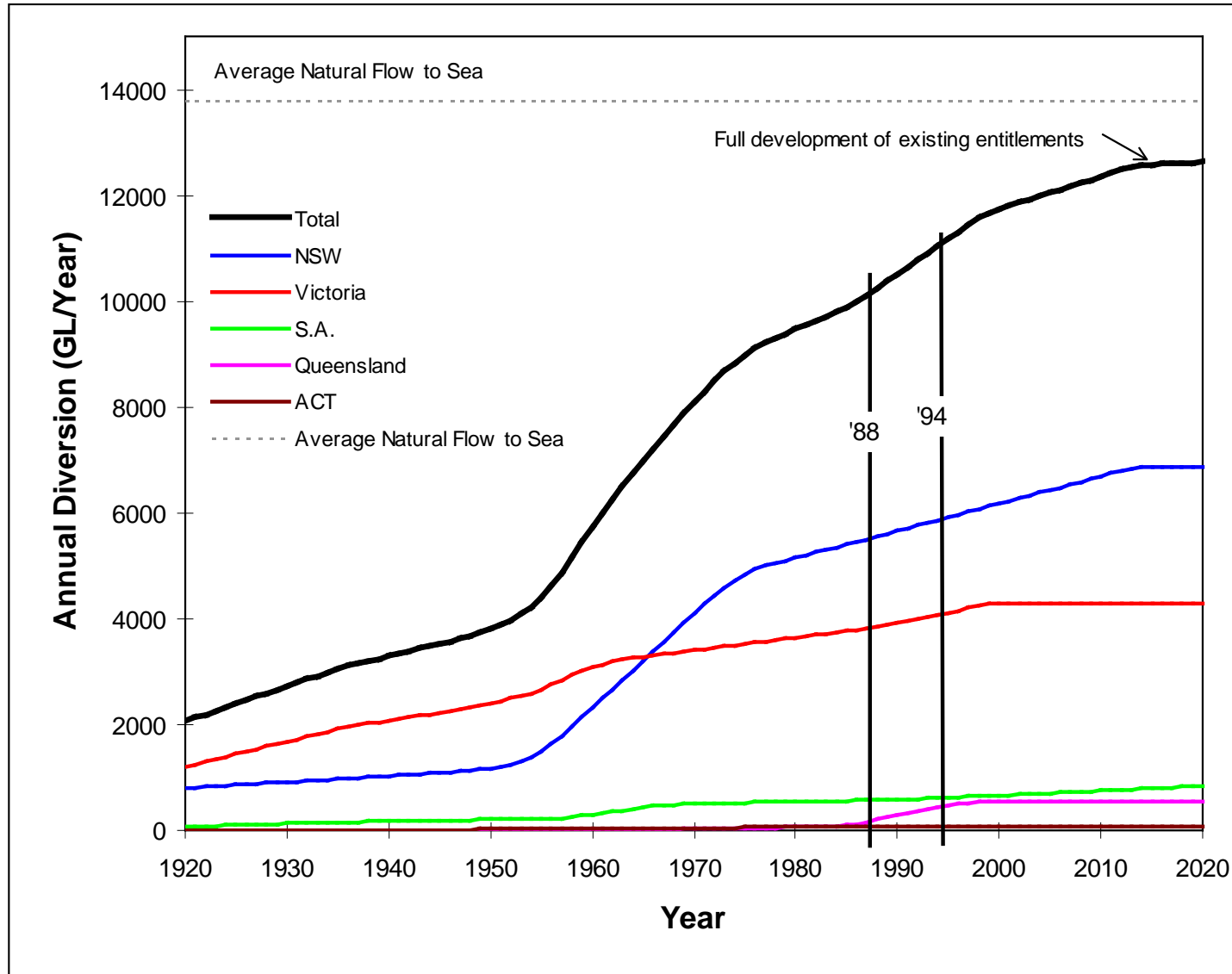
Diversion Growth in the Darling Catchment

Andrew Close

The Salinity and Drainage Strategy 1989

- ▶ The Salinity and Drainage Strategy established that the States were responsible for their actions after 1 Jan 1988.
- ▶ A salinity Register was established which recorded the States' debits from constructing drainage or permitting development that would mobilise salt to the river and credits derived from their contribution to Salt Interception Schemes.
- ▶ Before the strategy was approved it was noted that future growth in irrigation would increase salinity. NSW would only sign if the salinity impacts of growth 'up to the commitment level' were not accountable.
- ▶ When the 5 year review of the strategy took place in 1994, investigating the 'commitment level' was a key issue.
- ▶ It led to the 1995 Cap on diversions.

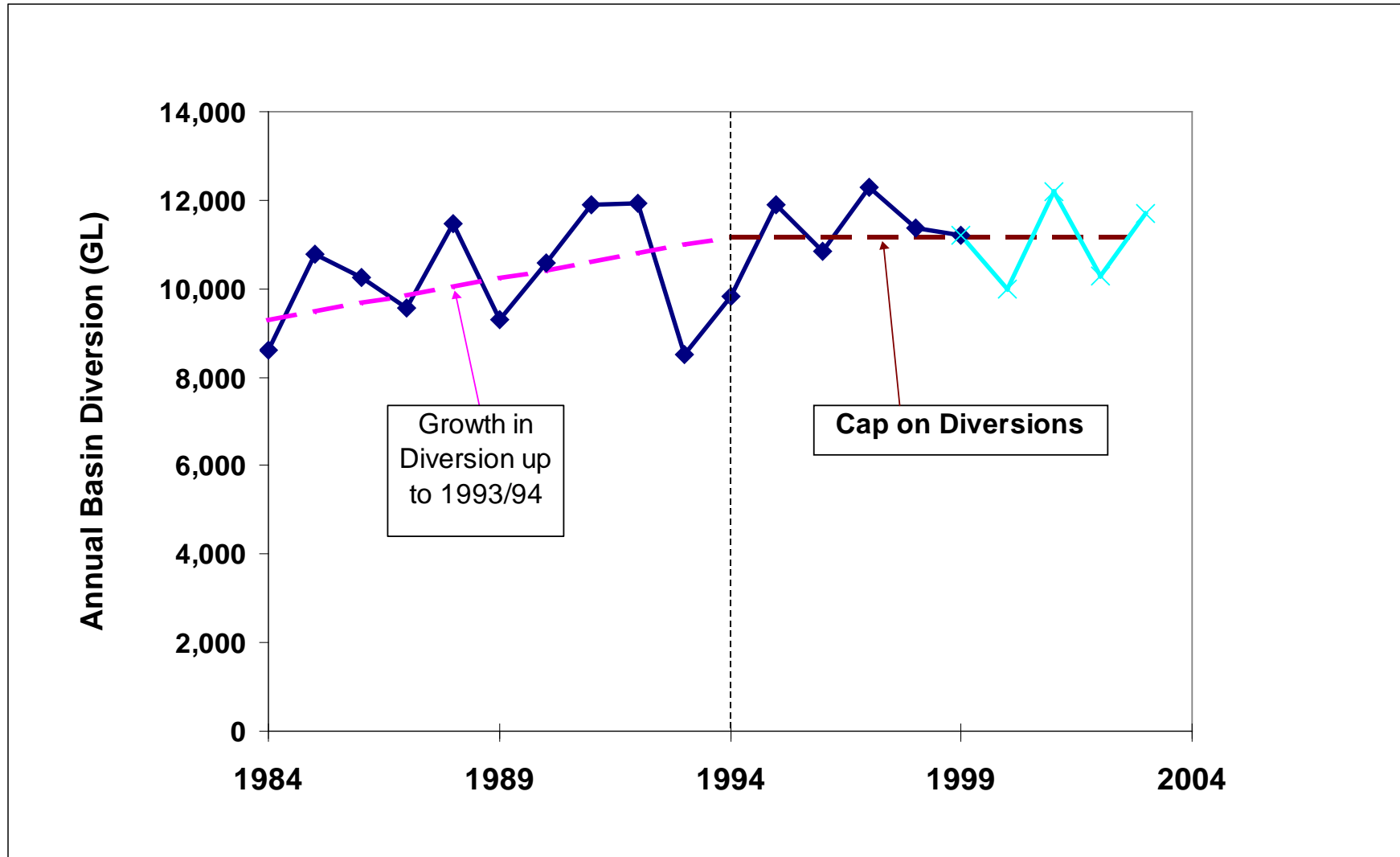
The Basin Cap 1995



The Level of the Cap

- ▶ *NSW and Victoria - "The volume of water that would have been diverted under 1993/94 levels of development"*
- ▶ *SA - 90% of issued entitlements (usage in 1993 about 70% on average)*
- ▶ *QLD - Water Resource Planning process to determine 'what the environment needs'*
- ▶ *ACT - Not included at the time but now have a 'Cap' that grows with population*

1993/4 Level of Development

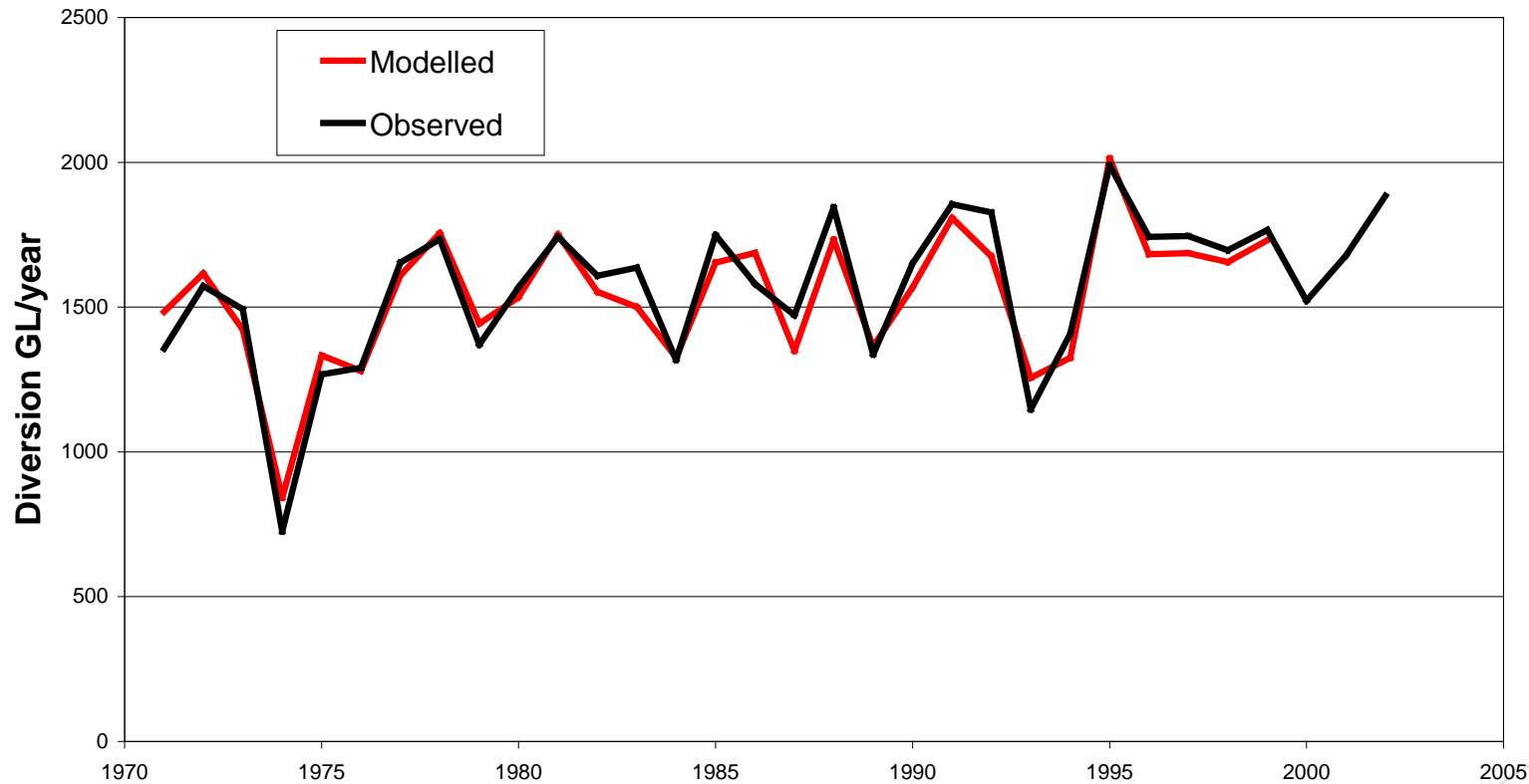


Testing compliance with the Cap

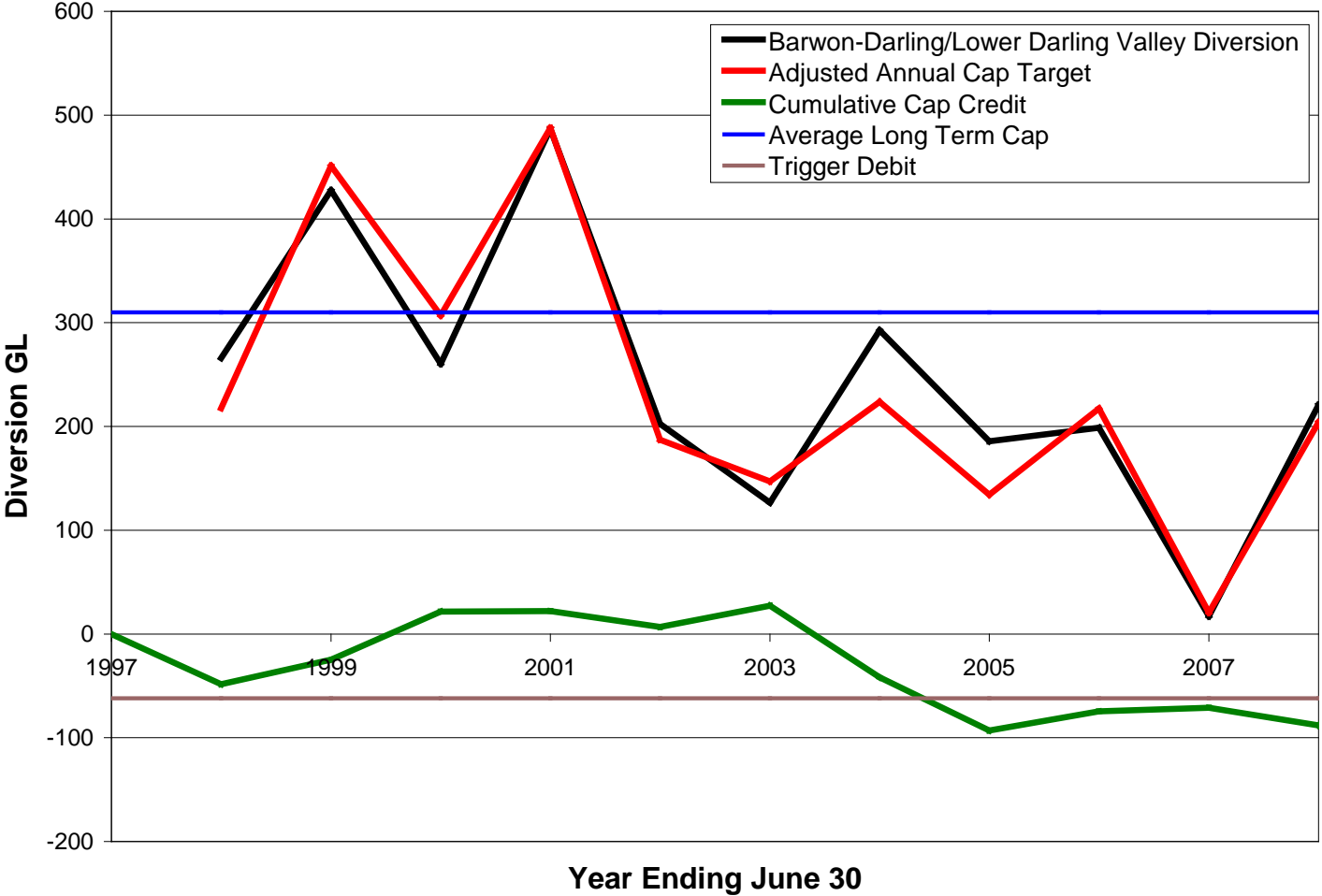
- ▶ How do you detect growth in a signal which has a large amount of seasonal noise?
 - ▶ Wait a long time
 - ▶ Use a model which can explain a lot of the noise
- ▶ A method for testing compliance was established in which measured diversions are compared with the output of a model set to Cap conditions and run at the end of the year using that year's climate information.

Some models explain a lot of the variation

Victorian River Murray Diversions Modelled Versus Observed

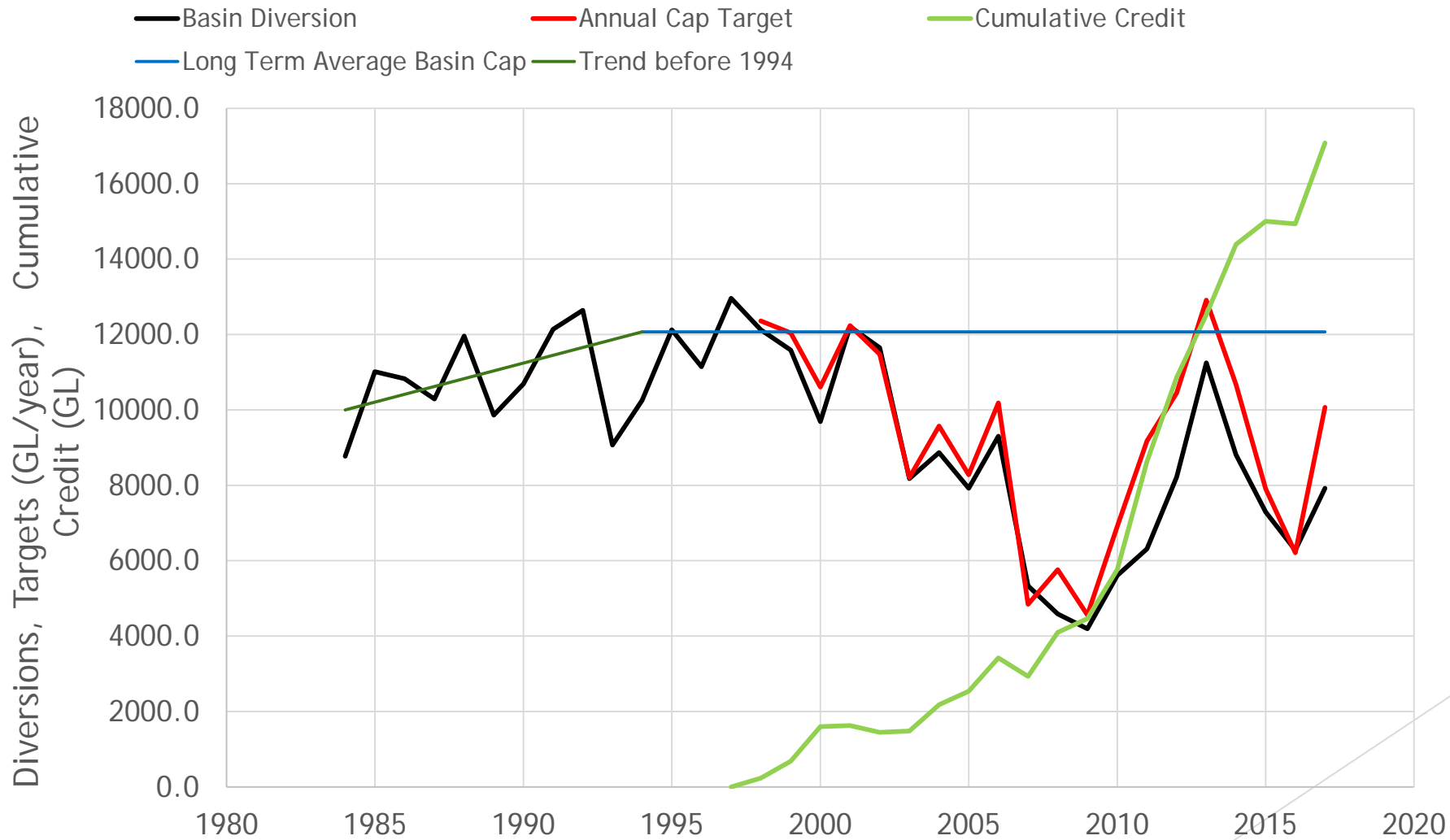


Example of Cap Compliance Testing



Basin-wide compliance with the Cap

7% below Cap



Establishing Diversion Limits

- ▶ The Cap established diversion limits across the Basin based in NSW and Victoria on the 1993-94 Levels of development.
- ▶ Models for all the rivers in the Basin were calibrated for the period 1983-1994
- ▶ They were audited to confirm that the Cap model fairly represented the agreed Cap conditions.
- ▶ All Cap models were then accredited by the MDB Ministerial Council.
- ▶ The Cap model run over the period 1895-2009 currently defines the long-term average Cap volume for each river valley

Change in Diversion Limits since 1995

- ▶ The Diversion Limits have changed since 1995 because of:
 - ▶ The inter-valley trade in permanent water entitlements which occurred up to 2007
 - ▶ The implementation of the NSW Water Sharing Plans in 2003 which reduced NSW diversion limits by up to 10%.
 - ▶ The recovery of 500 GL for the River Murray environment under the Living Murray Program up to 2009.
 - ▶ The recovery of up to 210 GL for the Snowy River and 70 GL for the River Murray environment under the Water for Rivers program
 - ▶ The recovery of 2100 - 2750 GL for the Basin environment under the Basin Plan between 2009 to 2019.
 - ▶ With the exception of the NSW WSPs, the new Diversion Limits have been defined as a reduction from the Cap over a specified modelling period (1895-2009 for the BP)
 - ▶ The Diversion Limit existing prior to the Basin Plan is called the Baseline Diversion Limit (BDL).
 - ▶ The Limit defined by the Plan is the Sustainable Diversion Limit (SDL)

Managing diversions under the Basin Plan

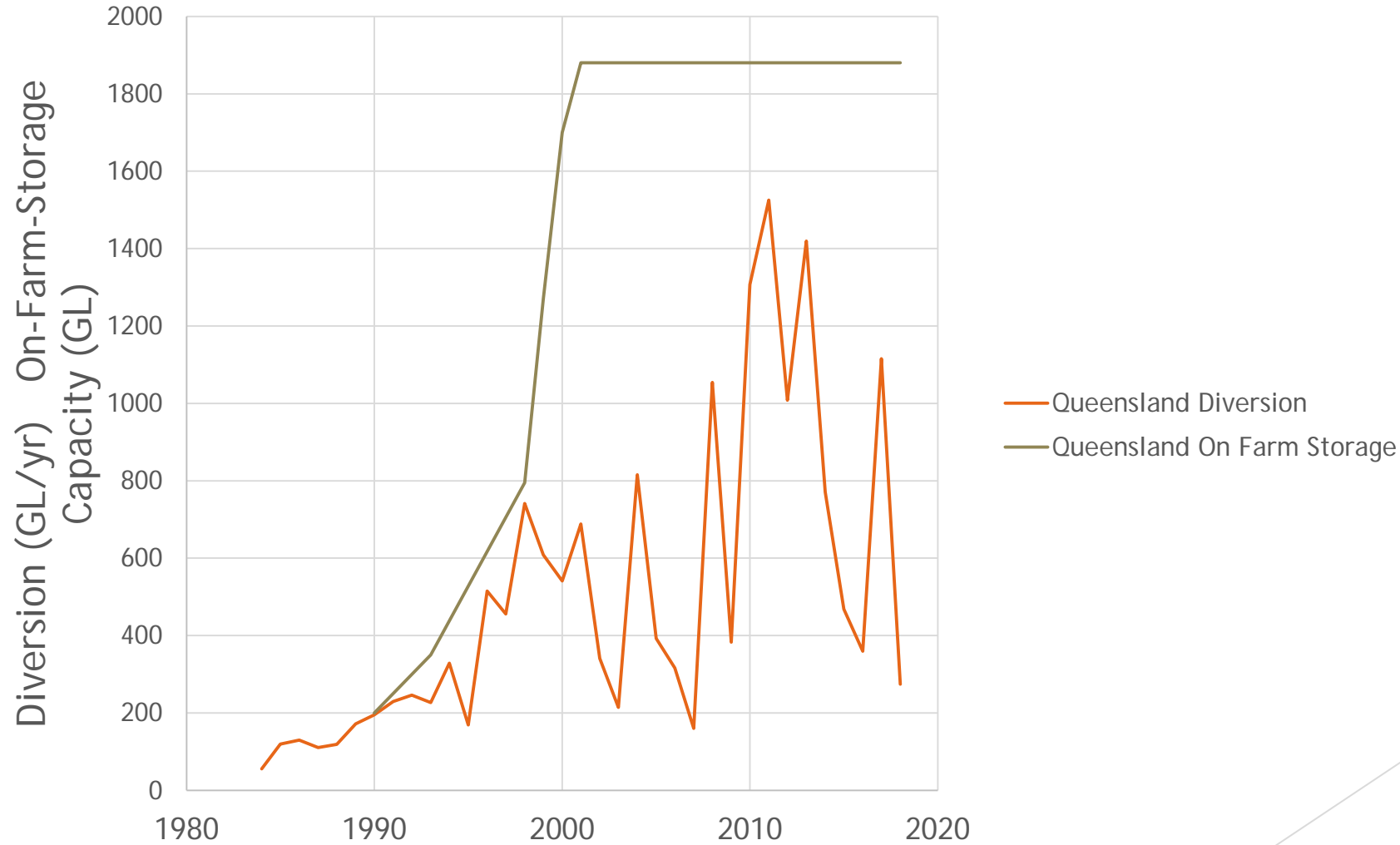
- ▶ The management of water use under the Basin Plan will be similar to that under the Cap with the following exceptions:
 - ▶ The annual targets will come from an SDL model which will model conditions as close as possible to the proposed future operation but will be adjusted such that the average diversion from the model when run over 1895-2009 is equal to the SDL.
 - ▶ If an SDL resource units cumulative SDL debit exceeds 20% of its long term SDL, the State will be sanctioned unless they are granted a reasonable excuse. If the period of exceedance lasts more than two years this excuse will only be granted if the State develops and implements a growth-in-use strategy to bring its debit back below 20%.
 - ▶ The BP also puts limits on groundwater use and interception activities such as farm dams and reforestation.

Diversions in the Darling Catchment

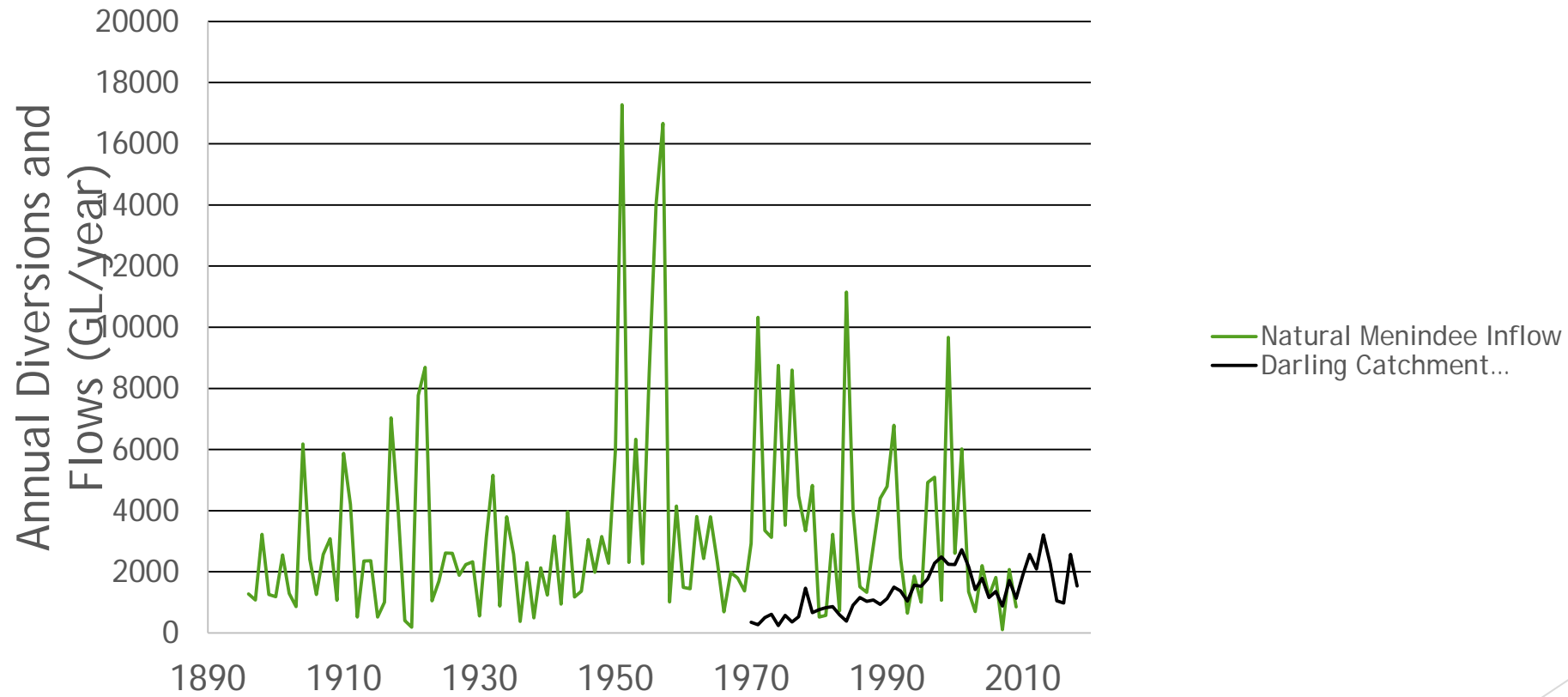


Setting the Cap in Queensland

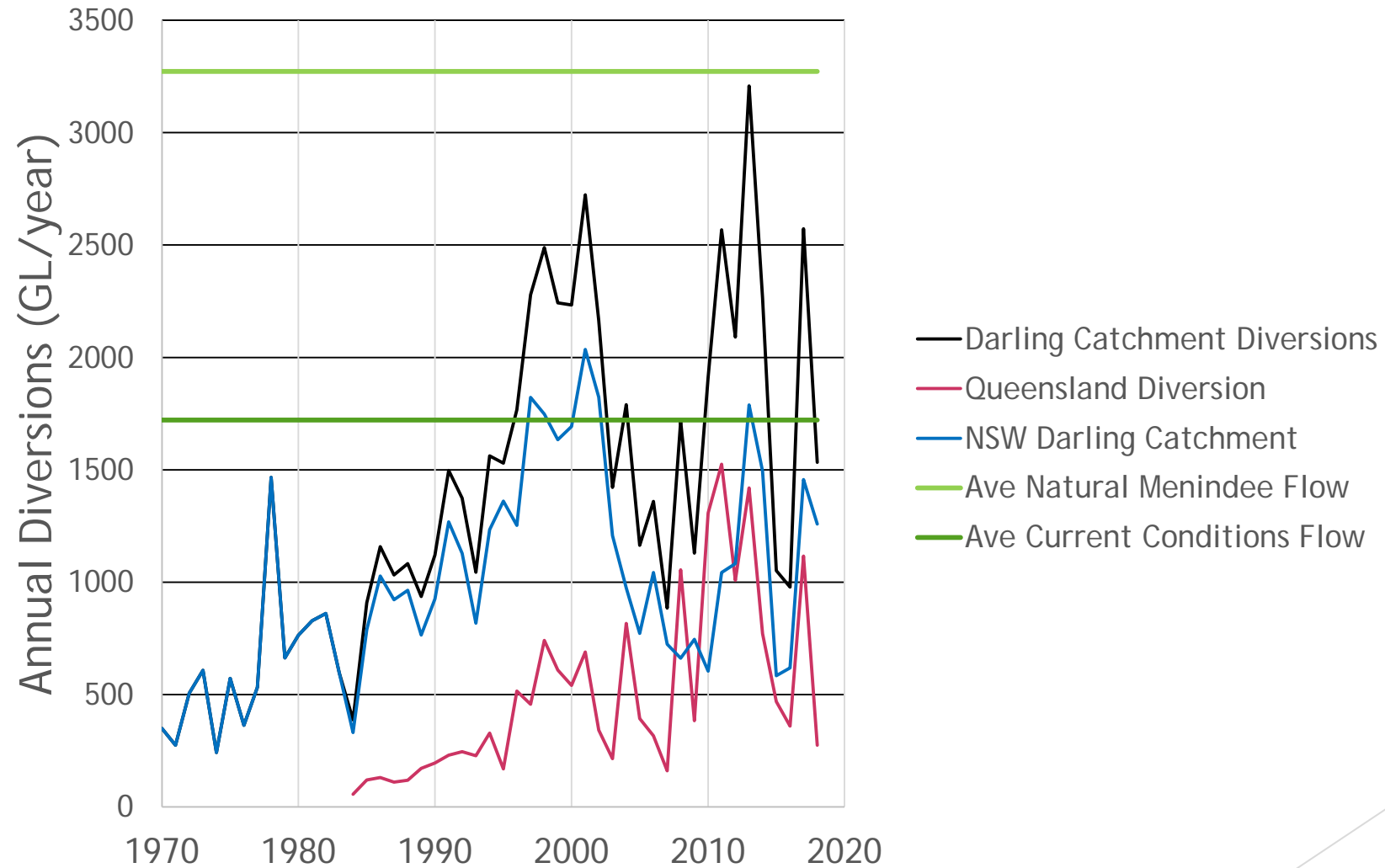
Determining what the environment needs



Comparison of Diversions upstream of Menindee and modelled pre-development Menindee Flows



Development upstream of Menindee



Change in Menindee Inflows

