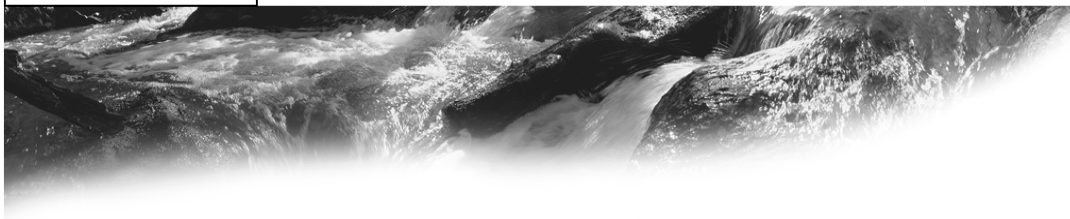

Advice to Water Management Committees



NSW Government



No. 1 Managing to Diversion Limits in Regulated Rivers

Why are diversion limits needed?

Water extractions in most of the major inland regulated rivers in NSW grew between the mid 1980s and mid 1990s in the range of 1% to 3% per year. Despite restrictions on allocations and supplementary water (also known as off-allocation water) and changes to the accounting system for allocations, there is still potential for increased diversions in all regulated rivers.

Increases in water diversions:

- weaken efforts to protect and restore the health of our rivers and undermines the environmental flow rules of a Plan, which are based on a particular level of diversions and resulting effect on the flow regime;
- reduce flows from upstream river systems into downstream systems;
- reduce water available to other legitimate businesses; and
- in the inland, impact on NSW's ability to meet its inter-government obligations under the Murray-Darling Basin cap.

What should the diversion limits in a regulated system be?

In all Murray-Darling systems, an **average annual diversion limit** for each regulated river will be determined. This then becomes the benchmark for auditing and reporting purposes.

The diversion limit will be established as part of the bulk access regime of the water sharing plan. The bulk access regime will also include the water sharing plan's management rules - the environmental flow rules, rules for basic rights and water management arrangements for access licences. In the Murray-Darling Basin, the diversion limit must not exceed the Cap (the long

term average water diversion based on the 1993/94 development and management).

The **plan diversion limit** will be defined as a long-term average level of diversion which would result from the development levels and farm management assumed in the formulation of the water sharing plan and the water sharing plan's system management rules. The computer simulation model for each regulated river will be used to assess the resulting long-term average diversions.

It should be noted that floodplain diversions associated with works in place in the Murray-Darling Basin prior to the end of the 1994 irrigation season will be considered as within the NSW cap. This will be determined over the next few years as part of the process of licensing existing works. In addition to prevent increases in water diversions no further floodplain harvesting works will be permitted. (For more information refer to Advisory Note No 3: Floodplain Harvesting)

Why is a strategy for managing to diversion limits needed?

Water sharing plans will be set for a 10 year period and water diversions could grow significantly over this period as a result of:

- activation of current sleeper (inactive) licences through business expansion or trading;
- increases in on-farm infrastructure on already active irrigation properties; and
- changes in water users' management decisions - for example, whether irrigators take greater risks and plant additional area in hope that allocations will increase during the year.

Any such growth will undermine the Plan's environmental objectives if it takes extractions beyond the diversion limit, and have a number of other unacceptable impacts. It is essential that the Plans include a strategy for reducing diversions if they do grow beyond the Plan diversion limit during the 10 year Plan life.

The strategy will also be an important component for defining and maintaining licence holders rights to access water over the life of the plan. It therefore needs to be clearly specified in the plan to allow licence holders to plan their business activities with confidence.

How will assessments occur?

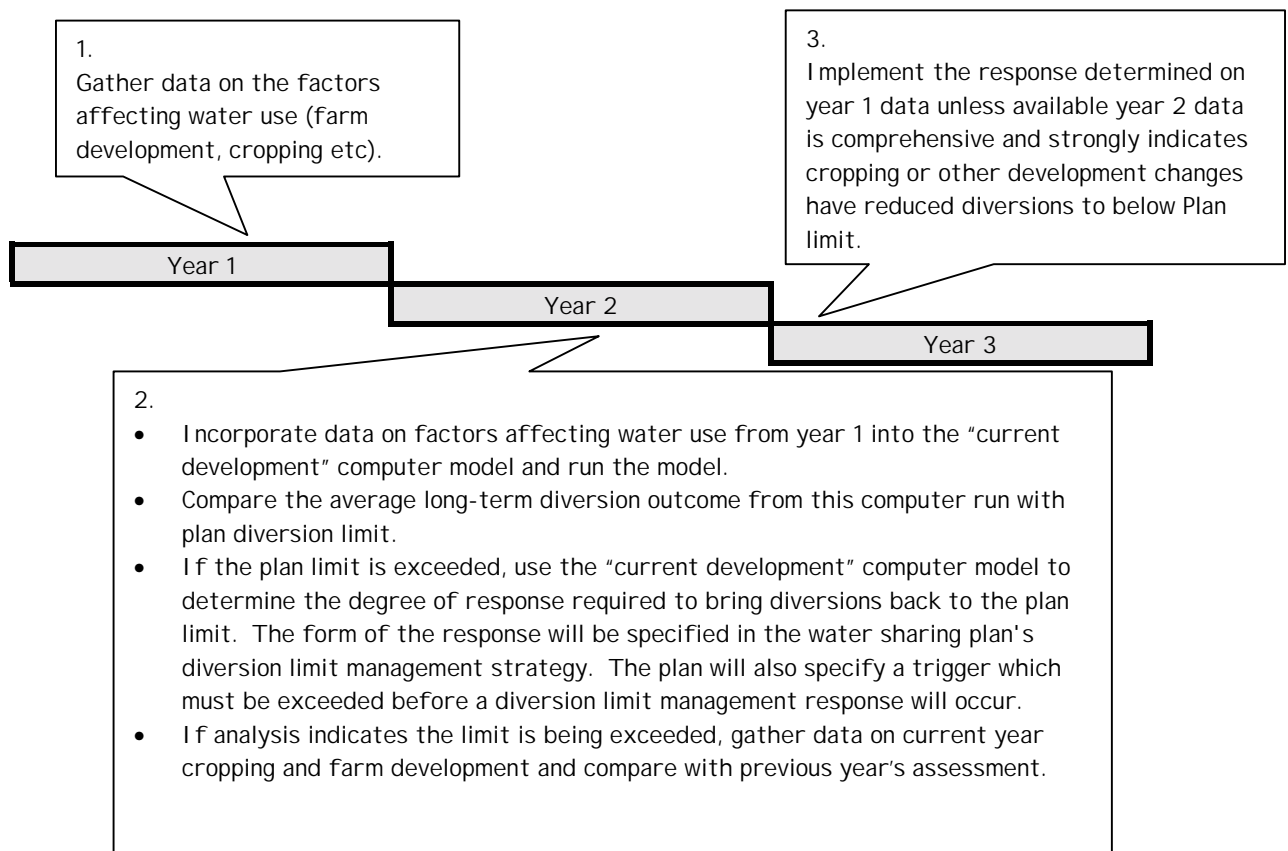
Audit and reporting of regulated valley diversions will be undertaken each year and be based on the results of computer model runs set to represent different situations and run over the historical period of climatic record (which could be 100 or

more years). The model provides the long-term average diversions for each situation over that period, thereby covering the worst recorded droughts and the very wet periods.

Audit and reporting will be based on a comparison of the modelling results from situations representing:

- "current development" - the long-term average modelled diversion based on the development and management in place at the time of the audit, and
- the plan's diversion limit - the long-term average diversions resulting from the development levels and farm management assumed in the formulation of the water sharing plan and the water sharing plan's system management rules.

The audit and response assessment process is shown below.



What should the management response be?

The only way to reduce water diversions is to alter the rules that determine how much water is available for diversion. There are two basic ways this can be done:

1. by adjusting the rules that determine how much water is made available for diversion; and
2. by introducing stronger environmental flow measures.

To be effective the response should:

- ◆ return the level of use to that which has been targeted as quickly as possible - the greater the time-lag between the growth and the impact of the response, the more difficult it will be to keep growth momentum in check;
- ◆ provide clear and immediate disincentives to further growth;
- ◆ be clearly connected to growth having occurred; and
- ◆ minimise supply fluctuations and unpredictability.

Adjusting the rules that determine water available for use would have an obvious and immediate effect and would be likely to influence diversion behaviour in the following season and reduce the likelihood of more growth. There would also be a clear relationship between the occurrence and degree of growth in use and the reduction in available water. A further advantage of adjusting the rules is that if the effect of the adjustment on diversions is greater than predicted, it can be easily wound back in following seasons.

Environmental flow adjustments would be much less effective as the impacts may take several years to be experienced. They would therefore be unlikely to quickly return diversions to target levels or act as a clear disincentive to further growth. Stronger environmental flow measures would also generally increase supply fluctuations and reduce supply predicability.

Principle 1

The rules that determine water available for use will be adjusted to make less water available if assessment indicates that the Plan limit has been exceeded.

A response could be triggered whenever an assessment indicates a diversion limit has been exceeded. This may result in very frequent responses occurring as a result of very small amounts of development increase or some transitory and minor change in water user behaviour.

It is therefore sensible for the diversion limit management strategy to specify a growth in diversion trigger that must be exceeded before a management response occurs. However, the trigger level should not place the Cap at risk in inland rivers. It should also be small enough so that any business disruption will be minimal and that the response will occur quickly enough to forestall inappropriate investment.

The trigger rule should also ensure there will be a response where it is clear the increase in usage has been consistently occurring over a number of years.

Principle 2

The trigger for a diversion limit management response in any one year should be a maximum of 3% of the Plan limit. In inland systems it should also not exceed half the difference between the Plan limit and the Cap.

If, for 3 consecutive years, the yearly assessment exceeds the plan diversion limit but does not exceed the 3% trigger, then this will automatically invoke a management response.

The degree of adjustment required to return use to the plan's diversion limit will depend on a variety of hydrologic and farm development factors. The "current development" computer model will need to be used to determine the change required.

Principle 3

The degree of adjustment required to bring diversions back to Plan limit will be determined using the "current development" computer model for the water source.

Water available for diversion can be reduced by changes to allocation limits or access to supplementary (off-allocation) water. The *Water Management Act 2000* gives supplementary water licences the lowest priority. This water also has significant environmental benefits.

In addition, growth in supplementary water use is a primary cause of growth in the northern inland

valleys. Although supplementary water is of lesser importance in the other regulated rivers, restrictions on its use could still be used to offset substantial amounts of diversion growth. The use of supplementary water can be restricted in the Murray-Darling Basin by:

- reduction in the annual diversion limits for supplementary water,
- reduction in the percentage of each event made available, and
- increase in the flow threshold or other initiation criteria that determine when supplementary water is declared.

Reduction in the diversion limit is preferable as this would directly discourage inappropriate investment in on farm storages.

Principle 4

The first management response when the growth in diversion trigger is exceeded will be to reduce the maximum annual volume of supplementary water that is allowed to be extracted.

If analysis indicates that elimination of supplementary water diversions will be insufficient to return extractions to diversion limits, then reductions in the water available to higher priority licence holders will be required.

Regulated river (general security) and regulated river (high security) are the next highest classes of access licence. Increases in diversions under these licences are most likely to occur through increased cropping and trading of excess entitlements in high water availability years. Reductions in the maximum annual volume of water made available for diversion is therefore likely to be an effective response to any growth in diversions.

In the southern inland valleys and in the Hunter, high security entitlements make up a significant component of total licensed volume. Increased activation of these licences through on-farm development and water trading is likely to be a contributor to any growth in diversions. The *Water Management Act*, however, requires that any reductions in water allocations to high security licences occur at a lesser rate than water allocations to general security licences. In many cases, these licences also service industries that are less able to quickly adapt to a reduction in available water than those supplied by normal security licences.

Principle 5

If further reductions in water availability are required, then these should be achieved through reductions in regulated river (general security) licences.

Concurrent reductions in water available to regulated river (high security) licences may also form part of the response providing:

- these reductions are at a lesser rate than those being applied to regulated river (general security) licences; and
- they adequately consider the ability of high security licence holders to adapt to supply reductions.

However, no reductions should be made to water utility and domestic and stock licences. These are the highest priority categories of licence and they represent only small component of total entitlements in most valleys and are not likely to be a significant contributor to a growth in diversions. Towns and stock and domestic users are also less able to respond to reductions in water availability.

Principle 6

No reductions are to be applied to water available to holders of domestic and stock licences, major utility access licences or local water utility licences.

Committee Role

Based on these principles, the committee is to recommend a diversion limit management strategy for their regulated river water source.

Government Role

The Government will provide the Committee with:

- draft plan provisions that reflect the above requirements and recommendations; and
- information the committee may require in the development of its recommendations.