

**Submission  
No 104**

## **INQUIRY INTO ADEQUACY OF WATER STORAGES IN NSW**

**Organisation:** Nature Conservation Council of NSW

**Date received:** 9/09/2012

---



The voice for the environment since 1955

Level 2, 5 Wilson Street, Newtown NSW 2042

**Ph:** 02-9516 1488 **Fax:** 02-8026 8301

**Email:** [ncc@nccnsw.org.au](mailto:ncc@nccnsw.org.au)

**Web:** [www.nccnsw.org.au](http://www.nccnsw.org.au)

**ABN:** 96 716 360 601

The Director  
Standing Committee on State Development  
Parliament House  
Macquarie St  
Sydney NSW 2000

Monday 27 August 2012

Dear Sir,

**Inquiry into the adequacy of water storages in NSW**

The Nature Conservation Council of NSW (NCC) welcomes the opportunity to make a written submission to the Parliamentary *Inquiry into the adequacy of water storages in NSW*.

NCC is the peak environment organisation for NSW, representing more than 100 environment groups from across the state. NCC has had a long involvement in water policy matters, including development of the *Water Management Act 2000*.

NCC would appreciate an opportunity to present to a public hearing of this inquiry and requests notification of hearing dates once they have been established.

Yours sincerely

Pepe Clarke  
Chief Executive Officer

## **Submission for Inquiry into adequacy of water storages in NSW**

*The terms of reference are:*

*That the Standing Committee on State Development inquire into and report on the adequacy of water storages in NSW, and in particular:*

- a) the capacity of existing water storages to meet agricultural, urban, industrial and environmental needs,*
- b) models for determining water requirements for the agricultural, urban, industrial and environmental sectors,*
- c) storage management practices to optimise water supply to the agricultural, urban, industrial and environmental sectors,*
- d) proposals for the construction and/or augmentation of water storages in NSW with regard to storage efficiency, engineering feasibility, safety, community support and cost benefit,*
- e) water storages and management practices in other Australian and international jurisdictions,*
- f) any other matter relating to the adequacy of water storages in NSW.*

### **Introduction**

In NSW there are already 372 prescribed dams and weirs (Dam Safety Committee Annual Report 2011) that store, regulate and divert water. Dams adversely affect the natural flow of rivers and create major hydrological, ecological, biological, geomorphological and physical problems. Many short and long term negative impacts have been demonstrated on native fish, crustaceans, molluscs, algae and water quality. Water storage and regulation does not only impact on the ecology of our rivers but also some agricultural activities such as floodplain graziers through reduced and altered wetland/floodplain watering.

Some of the most significant impacts of water storage include changed flow regimes, coldwater pollution, fish migrations, loss of natural watering of wetlands and floodplains, increased salinity and acidity. Fish species have already been eliminated from hundreds of kilometres of various rivers due to regulation by storages.

The Nature Conservation Council of NSW (NCC) has developed and endorsed a water policy that calls for no further construction of dams on waterways. NCC considers it would be remiss of a Government Inquiry of this nature to not consider the previous impacts of dam construction and operation on our natural resources.

The capital costs of maintaining and upgrading existing water storage infrastructure is also significant for Government. Dam safety and upgrading of outlet facilities are often very costly but essential to asset management requirements. The existing infrastructure of dams, weirs and regulating structures across NSW already has created a legacy of capital maintenance for dam safety performance and upgrade of outlet and spillway facilities. Fish passage has also been cost effective to include at this time for critical on river structures.

It is critical that Government gives due regard to the significant progress made on demand management and the efficiency of water use as a means of meeting water supply demand for both existing and new endeavours. The opportunity to enhance the efficiency of use of the water

resource will most definitely be through demand management measures and pricing. The water resource is not infinite and it is apparent that water needs to be appropriately valued and used conservatively in a region of highly variable rainfall such as NSW.

The proposal to build Tillegra Dam on the Williams River in the Hunter Valley was a clear example of an unjustified short term solution to water shortage that was better resolved by demand management and alternative supplies. This raised the issue of the loss of prime agricultural land by inundation of a water storage, the poor efficiency of water storage due to losses and the significant impacts on downstream ecosystems.

*(a) Capacity of existing storages to meet agricultural, urban, industrial and environmental needs*

The capacity of dams to meet current demands for water is fundamentally rainfall dependent but combined with demand management programs has the capacity to meet our existing needs. A dam in itself is no assurance of secure water supply and in the last severe drought many water users were impacted; for example many permanent plantings died and had to be removed in the south west. Another dam would not have solved the problem given the duration and severity of the drought.

Building expectations of communities that water supply will be continually expanded is flawed. The most critical aspect of water supply and management is the climate variability. Communities need to adapt to variations in security of supply. There will always be uncertainties and risks that need to be clearly understood and put up front in any assessment of water use schemes.

Demand management programs can be implemented far more widely across NSW than just in the Greater Metropolitan Region. Managing demand and expanding recycling programs will be the most cost effective and sustainable water supply options for the future in NSW.

The dam site at Welcome Reef on the Mongarlowe River near Braidwood is a very good example of the weaknesses in building yet another dam to solve a temporal limitation in water availability. This site was identified in 1970s as a future option to increase Sydney's water storage capacity. It did not go ahead for economic and community conflict reasons. However when the water levels dropped to approximately 35% in Sydney's water supply storages, Welcome Reef was looked at very closely as an option. It was discarded because it was not cost effective for the water security and capacity to be achieved, it would always be rainfall dependent, the storage is shallow and evaporative and transmission losses would be high, and environmental costs were high. With effective demand management Sydney's water users were able to significantly reduce their water consumption and adapt to using less water. The desalination plant was selected to secure a non-rainfall dependent water supply augmentation to cater for Sydney's growth into the future together with demand management.

The NSW Water Management Act 2004 is based on the principle of adaptive management given the uncertainty of rainfall and water yields. This recognizes that all sectors need to build in an ability to be adaptive and live with uncertainty of water supply. There is an onus on all water users to build in strategies to adapt to uncertainties in water security. Adapting to the available water is a much more cost effective strategy than building more storages.

*(b) Models for determining water requirements*

Models for estimating water demand and supply are only as good as the period of flow records and experience in water use for that purpose in that specific area. The adequacy of models have been generally limited by these factors and now there is a growing recognition that rainfall seems to reflect long term cycles of wet and dry years which will be more complicated by the predictions for climate change. These models need to be used very cautiously and not in isolation.

*(c) Storage management practices to optimise water supply to the agricultural, urban, industrial and environmental sectors.*

Storage management practices involve both operation of releases to meet various demands, maintenance of infrastructure, managing water quality and maintenance of air space if flood

mitigation is a function of the storage. “Optimizing” storage management for agriculture, urban, industrial and environmental sectors is generally difficult given the different demands, timing, quality and temperature of release water.

NCC recommends that water authorities undertake a review of all dam infrastructure on a 5 yearly basis, including a thorough assessment of the condition and status, and needs for modification. In some cases it may not be cost effective to maintain structures that have outlived their purpose and removal is a practical option

Any future storages would need to include variable level offtake facilities and fish passage facilities which also require specialised management practices. The use of storages for flood mitigation has a negative impact on downstream flow regimes by capturing small freshets and changing the shape of the hydrograph (proven to be important for stimulating upstream fish migrations).

*d) proposals for the construction and/or augmentation of water storages in NSW with regard to storage efficiency, engineering feasibility, safety, community support and cost benefit.*

Any proposal for construction or augmentation of water storages must ensure that enough water will be available to meet both the environmental and human needs as well as the cost efficiency/feasibility objectives.

The NCC is of the view that new dams “on rivers” is unnecessary and unacceptable given the damage from past river regulation. The most practicable option for future water supply development would be augmentation of existing schemes through recycling systems that use the existing storages as holding and cleansing reservoirs. Investment in reticulation systems that would collect stormwater and wastewater for treatment and return to storages would be worthy of close examination. Even recycling for potable water supply has been safely practised in many overseas countries very successfully over a long time however community reaction is ill-informed and emotional in Australia. This is the key to future development of water resources in NSW.

*e) water storages and management practices in other Australian and international jurisdictions,*  
The experience in European and Asian countries is worthy of full examination given their history and innovation in demand management and recycling.

*f) any other matter relating to the adequacy of water storages in NSW.*

The fundamental issue in this Inquiry is to define the objective that Government is seeking to address about water supply – what water needs and for what purpose and sectors.

### **Conclusion**

The NCC is not supportive of further proposals to dam or regulate our rivers but calls for investigation of innovative options to use demand management and recycling to make better use of our valuable water resource and existing water infrastructure.