



Department of Primary Industries

Office of the Director General

DGPO12/327

17 SEP 2012

Mr Ian Young
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Dear Mr Young

I refer to your email dated 24 August 2012 in regards to the Standing Committee on State Development "Inquiry into the adequacy of water storages in NSW".

Please find attached response to supplementary questions on notice for the NSW Department of Primary Industries.

If you have any further questions in relation to this matter, please do not hesitate to contact David Harriss on 02 8281 7357.

Yours sincerely

**RENATA BROOKS
A/DIRECTOR GENERAL**

**Inquiry into adequacy of water storages in NSW
Supplementary Questions Department of Primary Industries**

1. *One of the terms of reference for this inquiry requires us to examine models for balancing the water requirements of the agricultural, urban, industrial and environmental sectors. How does DPI balance these competing demands when determining water requirements in NSW?*

NSW Office of Water balances the competing demands when determining water access in NSW in a number of ways.

All extraction for commercial purposes must be licensed by the NSW Office of Water and the licence specifies the maximum volume that can be extracted. However annual extractions are also determined by allocation announcements.

The Water Management Act sets out the priorities for supply. Water to maintain the fundamental health of the system and supply basic landholder rights have first priority. In terms of consumptive licensed users- local water utilities, major utilities and domestic and stock access have priority over all other consumptive users. In regulated rivers high security licence holders (towns, permanent plantings, some industry) have priority over general security licences (which are mainly used for annual cropping and other industry needs), with supplementary water access the lowest priority. The Office of Water takes these priorities into account when determining annual allocation announcements for the different categories of licence. In allocating water in regulate river systems the NSW Office of water ensures that sufficient water is reserved to supply high priority needs for two years before determining allocations for general security users.

During periods of severe water shortage, the following priority is prescribed under the Water Management Act, 2000:

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|--------------------------|---|--|
| 1 st priority | - | domestic supply for towns and utilities
basic landholder rights |
| 2 nd priority | - | environmental needs |
| 3 rd priority | - | commercial supply for towns and utilities
high security needs (in regulated rivers) |
| 4 th priority | - | other licensed needs. |

Through the water sharing plans, environmental needs are met through limits on extraction and through various environmental flow rules or provisions. Information on the key aspects of the water sharing plan process and requirements can be found on the Office of Water's website at <http://www.water.nsw.gov.au/Water-management/Water-sharing-plans/how-water-sharing-plans-work/default.aspx>

In developing a water sharing plan, all demands are considered in managing extraction on both annual and daily scales. On an annual scale the plans contain long term average annual extraction limits (LTAAEL). Extractions from all licensed water users and basic landholder rights are managed collectively under the LTAAEL with individual uses getting a share of this overall LTAAEL. This limit may be set based on a number of approaches including the Murray Darling Basin Cap on extractions for inland surface water systems, sum of entitlements for coastal unregulated and alluvial system or methods such as a sustainability index for groundwater systems.

Daily access rules and trade rules in the water sharing plans are developed for broad areas after sub catchments or aquifers have been classified on the basis of their social, economic and ecological values. Where people or regional economies are highly dependent on water extraction, water sharing plans aim to affect those uses as little as possible. Where valuable ecosystems are dependent on stream flows or groundwater and are likely to be affected by extraction, plans aim for more control of water extraction. Where both needs apply, they are carefully balanced.

In the case of surface water, water sharing plans are being developed for a range of widely differing rivers. Some of the issues considered in forming water sharing rules include:

- instream values, such as threatened fish that are likely to be affected by flow extraction
- hydrologic stress – the amount of water extracted relative to river flow
- extraction value – the economic value of using the extracted water
- economic dependency of the local community on water extraction
- sensitivity of estuaries to the removal of fresh water
- current NSW Government Policy.

Indicative access rules are firstly developed by balancing the instream values with the economic dependence of local communities on extraction. The greater the risk to instream values the stronger the environmental flow rules. The higher the economic dependency the less stringent the access rules. Where economic dependency and instream values are both high, more intensive management is proposed.

In the water sharing plan, the stress from all upstream extraction is compared with the instream values in surface water systems or extraction compared with the aquifer values to determine a set of preliminary water trading rules. Trading is not allowed into water sources that have high instream or groundwater dependent ecosystem values. Trading is also limited in stressed water sources so as not to increase pressure on the river or aquifer. Where trading is permitted this dynamically adjusts shares for licence categories on an ongoing basis.

In addition to water sharing planning the competing needs of agriculture versus industrial requirements are addressed through the new Strategic Regional Land Use Plans, with the recent introduction of a Gateway process on Strategic Agricultural Land and a new Aquifer Interference Policy which outlines water licensing requirements and objectively defines minimal impact considerations for activities that impact on aquifers.

2. *The Government submission states that DPI is currently investigating a number of potential water storage and augmentation projects. What issues are considered when assessing possible projects, and what is the approval process for such projects?*

Any approval process for additional storages would require the standard process for major developments including feasibility, cost benefit analysis and environmental impact assessment and be subject to state and Commonwealth planning and environmental legislation. NSW is also subject to a cap on extraction in the Murray Darling Basin and, under the Basin Plan, extractions will be further constrained which will preclude increased water use.

NSW Office of Water is however currently undertaking joint studies with the Commonwealth to determine an acceptable proposal to achieve water savings by reducing evaporation losses at the Menindee Lakes storage. Work to date suggests there is an opportunity to achieve annual average savings of about 65 GL through a combination of works and

operational changes. Essentially the proposal is to limit the use of the most downstream lake, Lake Cawndilla, and to introduce rule changes to allow for more efficient operation of the remaining lakes. There is potential to use local groundwater as a drought security reserve for Broken Hill.

NSW requirements for a preferred option for Menindee Lakes is that the changes will not impact on the reliability of supply to downstream users, will not have any major impacts on the lakes environment and that the supply to Broken Hill will be assured.

The Commonwealth is considering funding the project as the water savings could be allocated to the environment and contribute to meeting the reduced sustainable diversion limits under the Basin Plan.

3. *The submission from CENTROC explains that the Office of Water is currently developing guidelines for water authorities to assess the secure yield of water storages in a variable climate (Submission 27, CENTROC, p 4.). Please tell us more about these guidelines, including how they were developed and what their purpose is?*

The NSW Office of Water has developed guidelines on 'Assuring Future Urban Water Security' for local water utilities on assessing their future water security and adapting to the impact of variable climatic patterns on the secure yield of their water supply. The guidelines were informed by a pilot study conducted by the NSW Office of Water that determined the impact of variable climatic patterns on 11 non-metropolitan NSW water supplies using projections of daily rainfall and evaporatranspiration from 15 global climate models, estimations of streamflows from daily rainfall-run off models and daily simulation of 106 years of storage behaviour to determine the secure yield for each utility until 2030.

The Guidelines will enable NSW local water utilities to assess their future secure yield on a similar basis to that carried out in the pilot study. The pilot study and preparation of the Guidelines has been overseen by a steering group involving CSIRO, the National Water Commission, NSW Public Works, the Local Government and Shires Associations, the NSW Water Directorate and the NSW Office of Water. The Guidelines are expected to be released shortly.

4. *A number of submissions have highlighted the importance of demand management practices to reduce water use, such as capturing storm water run-off and installing domestic tanks.*
- a. *Can you explain what demand management practices are currently encouraged by the Office of Water? How does the Office promote these initiatives?*
- b. *Some submissions also highlight the importance of better capturing greywater and using recycled water, particularly for industrial use. What issues are involved with using recycling water, for both domestic and industrial usage?*

The comprehensive NSW *Best-Practice Management of Water supply and Sewerage Framework* prepared by the NSW Office of Water includes water conservation and demand management. A copy of the framework is at Attachment 1. The key elements are:

1. Integrated Water Cycle Management (IWCM)
2. Strategic Business Planning
3. Pricing and Regulation Water Supply, Sewerage and Trade Waste
4. Water Conservation and Demand Management

5. Drought Management
6. Performance Monitoring.

As shown on pages 61 to 63 of the *NSW Best-Practice Management of Water Supply and Sewerage Guidelines, August 2007* available from the website of the NSW Office of Water at <http://www.water.nsw.gov.au/Urban-water/Country-towns-program/Planning-and-best-practice/default.aspx>, the NSW local water utilities are required to examine a range of demand management initiatives including:

- Implementation of permanent water saving measures to minimise wastage, in accordance with Item 91 (iii) of the National Water Initiative
- Active intervention – appropriate retrofit, rebate and building code programs
- Water pricing reform
- Community education
- Effluent and stormwater re-use.

Page 149 [Table 8C] of the *2010-11 NSW Water Supply and Sewerage Benchmarking Report* [http://www.water.nsw.gov.au/ArticleDocuments/36/utilities_performance_nsw_water_supply_and_sewerage_benchmarking_report_2010_11.pdf.aspx] provides details of the water conservation initiatives implemented by each local water utility.

The utilities are also required to pursue an active program to identify and reduce system water loss through leakage reduction [77 of the 93 NSW local water utilities responsible for reticulating water supply services have now undertaken such a leakage reduction program] and to identify and implement the cost-effective demand management options. The *Water Loss Management Report for Regional NSW Water Utilities* conducted by the NSW Water Directorate and the Local Government and Shires Associations, with funding assistance from the Australian Government, resulted in the utilities reducing their average real water loss from the initial value of 16% of the potable annual water supplied to 10%.

With regard to recycled water, including the use of greywater, the NSW Office of Water has a number of information sheets on these topics on its website and links to guidelines - refer to <http://www.water.nsw.gov.au/Urban-water/Recycling-water>. In general, the use of recycled water can contribute to saving freshwater resources. However all forms of wastewater have the potential to harm human health and pollute the environment and therefore must be used and managed properly.

5. *The Government submission makes reference to the National Urban Water Planning Principles. Please explain what these Principles are, and how NSW is implementing them.*

The water planning approach for Metropolitan Sydney complies with the National Urban Water Planning Principles adopted by COAG (a copy of the principles is at Attachment 2). In accordance with the National Urban Water Planning Principles, the Metropolitan Water Plan is reviewed periodically so that it can be adapted to meet new challenges and to take account of the latest data, techniques and research. The adaptive management planning approach for the Metropolitan Water Plan considers costs and benefits of a full portfolio of water supply and demand options consistent with the National Urban Water Planning Principles.

Overall the National Urban Water Planning Principles will form the basis of the review of the Metropolitan Water Plan and will be used to guide the development of the Lower Hunter Water Plan.

The comprehensive *NSW Best-Practice Management of Water Supply and Sewerage Framework* (as shown in Attachment 1) incorporates the National Urban Water Planning Principles and identifies 19 key requirements for NSW local water utilities to address in the planning and management of their water supply and sewerage businesses.

This Framework has been in place since 2004 and is the key driver for reform of planning and management and for continuing performance improvement by each NSW local water utility. The Framework involves strong pricing signals to achieve water efficiency [refer to page 5 of the *2010-11 NSW Water Supply and Sewerage Performance Monitoring Report* at <http://www.water.nsw.gov.au/Urban-water/Country-Towns-Program/Best-practice-management/Performance-monitoring/Performance-monitoring/default.aspx>].

The NSW utilities are required to develop a 30-year IWCM strategy for water supply, sewerage and stormwater. The strategy needs to use the estimated future secure yields of their water supply system and identify and implement the scenario which provides the best value for money on the basis of social, environmental and economic considerations (a triple bottom line basis).

The NSW Office of Water through the Country Towns Water Supply and Sewerage Program (information available at <http://www.water.nsw.gov.au/Urban-water/Country-town-water>) provides detailed guidance for the utilities on each of the above elements.

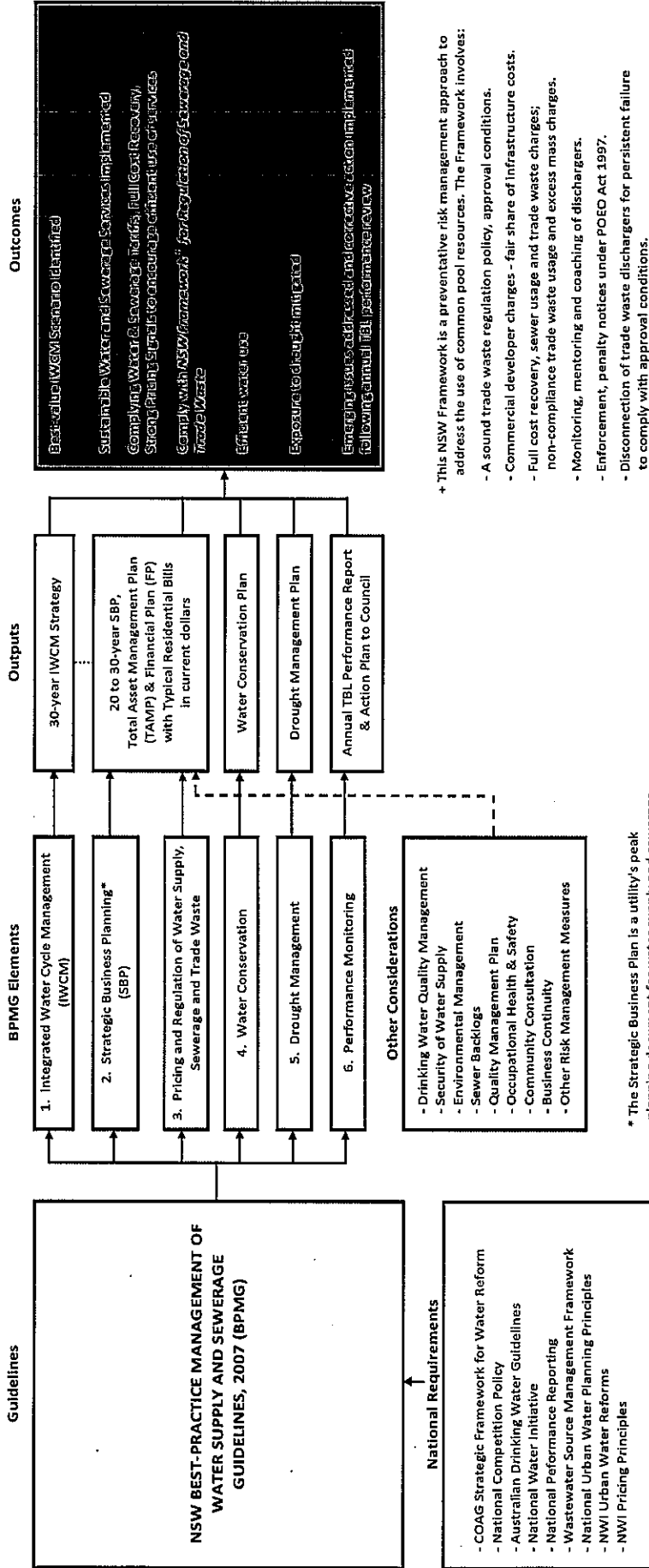
6. *Many of the submissions we received discussed water sharing plans, such as the Murray Darling Basin Plan. What involvement does the Department have in the development of such plans?*

The NSW Office of Water is developing and implementing statutory water sharing plans for all rivers and groundwater systems in NSW. NSW's water sharing plans extend for ten years and set extraction limits and trading rules and environmental flow rules or provisions.

The Murray Darling Basin Plan, being developed by the Murray Darling Basin Authority for the Commonwealth Minister for Water, is an overarching plan for the entire Basin which will set new extraction limits (known as sustainable diversion limits) for each river catchment and aquifer system and also overall trading rules. In the case of surface water catchments, the proposed sustainable diversion limits are in the main significantly lower than NSW's extraction limits with the MDBA proposing that surface water extractions across the whole Basin be reduced by 2,750 GL.

The Basin Plan has not yet been finalised, but if the Basin Plan is made, the Plan's sustainable diversion limits will have to be complied with from 2019 and the Murray Darling Basin Authority will have the role of accrediting State's plans against the requirements of the Basin Plan. NSW will therefore need to revise all of its water sharing plans for inland NSW from 2019 and have these accredited by the MDBA.

The NSW Best-Practice Management of Water Supply and Sewerage Framework



+ This NSW Framework is a preventative risk management approach to address the use of common pool resources. The Framework involves:

- A sound trade waste regulation policy, approval conditions.
- Commercial developer charges - fair share of infrastructure costs.
- Full cost recovery, sewer usage and trade waste charges; non-compliance trade waste usage and excess mass charges.
- Monitoring, mentoring and coaching of dischargers.
- Enforcement, penalty notices under POEO Act 1997.
- Disconnection of trade waste dischargers for persistent failure to comply with approval conditions.

* The Strategic Business Plan is a utility's peak planning document for water supply and sewerage.

Note that the *NSW Best-Practice Management of Water Supply and Sewerage Framework* is the practical means of implementing the Goal of the NSW Government's Country Towns Water Supply and Sewerage (CTWSS) Program by the non-metropolitan NSW local water utilities (LWUs), which are expected to comply with the Framework. The 19 requirements of the *Best-Practice Management Framework* are: WCM Strategy (2) - this is a requirement for each of water supply and sewerage, Strategic Business Plan (2), Water Conservation, Drought Management and Performance Monitoring (2) and the following 11 Pricing Requirements - Full Cost Recovery (2), complying residential charges (2), complying non-residential charges (2), Development Servicing Plan (DSP) with commercial developer charges (2), at least 75% of residential revenue from water usage charges, appropriate trade waste regulation policy and approvals, and complying trade waste fees and charges.

CTWSS PROGRAM GOAL:
Appropriate, affordable and cost-effective water supply and sewerage services in urban areas of non-metropolitan NSW which meet community needs, protect public health and the environment and make best use of regional resources.

COUNCIL OF AUSTRALIAN GOVERNMENTS PRINCIPLES FOR URBAN WATER PLANNING

National principles for urban water planning should be universally applicable when developing plans to manage the supply/demand balance of a reticulated supply for an urban population.

Key Principles

Key principles to achieve optimal urban water planning outcomes are:

1. Deliver urban water supplies in accordance with agreed levels of service.

The service level for each water supply system should specify the minimum service in terms of water quantity, water quality and service provision (such as reliability and safety).

Levels of service should not apply uniformly, but rather should be set for each supply system and potentially for different parts of an individual supply system. Agreement on levels of service will allow the community to understand how seasonal variability and climate change will impact on supply into the future and how different levels of service relate to costs. Measures undertaken to minimise risk and maximise efficiency in supplying water should be in accordance with agreed levels of service.

2. Base urban water planning on the best information available at the time and invest in acquiring information on an ongoing basis to continually improve the knowledge base.

Up-to-date information on current and future water resources, water supplies and water demand is critical for effective urban water planning. Information on possible future changes, such as population growth and climate change, is also important in understanding the ongoing water supply/demand balance and to determine an acceptable level of risk due to uncertainty.

Knowledge of existing customers (including who is using water, how much and for what end uses and an understanding of the differences between customers and geographic locations) is important when forecasting future water demands by end users in a particular category of use and the impact of possible demand management measures under consideration.

Urban water planning should be based on scenario planning, incorporating uncertainty in supply and demand, as well as integrated with future economic development and land use planning to ensure full knowledge of the availability of water supplies and water savings opportunities.

Where possible, information should be gathered in such a way that it enables improved information-sharing and research coordination between jurisdictions.

3. Adopt a partnership approach so that stakeholders are able to make an informed contribution to urban water planning, including consideration of the appropriate supply/demand balance.

Stakeholder input is essential to ensure that the proposed levels of service and the supply and demand management options required to deliver that level of service are considered in terms of consumers' attitudes, including willingness and ability to pay.

Community information and education programs should be an integrated part of urban water planning and should be designed appropriately, based on community input, to increase knowledge, understanding and informed participation in urban water planning, as well as increase water efficient behaviours.

Urban water planning should be based on a process that is transparent and inclusive, recognising different consultation approaches are appropriate in different circumstances.

4. Manage water in the urban context on a whole-of-water-cycle basis.

The management of potable water supplies should be integrated with other aspects of the urban water cycle, including stormwater management, wastewater treatment and re-use, groundwater management and the protection of public and waterway health.

The risks associated with different parts of the urban water cycle (such as trade waste, stormwater, etc) should be considered and managed. Water quality of potable supplies should be protected through appropriate catchment management practices and management of wastewater. This will involve a range of activities, from land use planning and management that protects the quality of natural water resources, through to addressing the disposal, treatment and reuse phases of the water cycle.

Such an approach should result in delivery of diverse water supplies which are fit-for purpose and optimise the use of water at different stages of the urban water cycle.

5. Consider the full portfolio of water supply and demand options.

Selection of options for the portfolio should be made through a robust and transparent comparison of all demand and supply options, examining the social, environmental and economic costs and benefits and taking into account the specific water system characteristics. The aim is to optimise the economic, social and environmental outcomes and reduce system reliability risks, recognising that in most cases there is no one option that will provide a total solution. Readiness options should also be identified as part of contingency planning.

Options considered could include the following: optimising the use of existing infrastructure through efficiency measures; residential, commercial and industrial demand management initiatives, purchasing or trading water entitlements from other sectors; and the development of additional centralised and/or decentralised water supply options, including manufactured water sources (such as recycling and /or desalination), where appropriate.

By considering the full range of options, access to a range of sources should be able to be optimised dynamically (even on a short term basis) through the availability of diverse infrastructures that may include both centralised and decentralised water supply schemes. These sources would be drawn upon in differing combinations depending on the local and regional climatic conditions and the mix of sources selected would be those resulting in the lowest environmental, social and economic costs over the long term.

6. Develop and manage urban water supplies within sustainable limits.

Ensuring the ongoing protection of the environment and waterway health is an integral part of urban water planning. Natural water sources for all water supplies, such as surface and groundwater supplies, should only be developed within the limits of sustainable levels of extraction for watercourses and aquifers.

Sustainable levels of extraction should be established through publicly available water plans prepared at a catchment and / or basin scale for all water use, including environmental requirements. In determining the sustainable extraction levels, regard should be had to the inter-relationships of different water sources.

To ensure sustainability, extraction levels should also be monitored over time and periodically re-assessed to reflect changes in scientific knowledge and climate variability.

7. Use pricing and markets, where efficient and feasible, to help achieve planned urban water supply/demand balance.

Tariff structures for water supplies should be designed to signal the full value of finite water resources to end users to encourage efficient water use. The price charged for urban water services should be transparent and linked to the level of service provided.

Rights to urban water supply should be clearly defined to the extent that it is economically efficient, cost-effective and feasible to do so, at the various levels of the supply chain. This in turn will facilitate the use of markets and trading where appropriate. This could include developing bulk water and wastewater markets, removing barriers to competition and institutional, structural and governance reforms.

8. Periodically review urban water plans.

Recognise that there is a need for periodic review of urban water plans and their underpinning assumptions. All parties involved in the development of an urban water plan should be committed to ensuring that the plan can adapt as necessary to reflect additional information / knowledge and changing circumstances.

Planning should recognise that some demand / supply responses are short-term and are required to be adaptive, while other responses such as water infrastructure planning and investment have a longer planning horizon because the assets have a considerable lifespan.