Sustainable Options for an Urban Water Supply

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Whereas Australians know they live on an extremely dry continent (less than 12% of the rain that falls on the continent actually reaches a stream) yet we grow crops and nurture home gardens as if we live in a well watered landscape. Our centres of population are distant from the high rainfall regions of the top end and Tasmania.

The philosophy adopted by the State-owned metropolitan water authorities in the middle 1900s was to build ever larger dams as their cities grew. By the 1990s it was clear that this practice was no longer sustainable or environmentally acceptable. Demographers predicted that the population of capital cities would increase by about a third in the next 50 years, and water agencies were faced with the problem of satisfying this increased demand when government and community sentiment was against building more dams. The agencies, however, had no well developed management strategies that would be both effective and acceptable to all users – households, industry, commerce and municipalities.

This situation requires government leadership to direct the agencies to harness their knowledge of customers' behaviour and technical skills to develop management options for government to consider. In Victoria, the government appointed a Strategy Committee with clear terms of reference, including ensuring that the opinions and concerns of the general community and other users were widely sought and considered. It is also important to note that the members of the Strategy Committee were representative of the water industry, the different user groups, conservation and social service interests, ecologists and various regulatory agencies. This Committee was empowered to supervise the work of technical groups, commission reviews etc, develop the communication mechanisms and finally report to government on the options.

Proposed options are likely to require the community and industry to change established practices and this requires a full disclosure of the boundary conditions of supply and the current and projected patterns of demand.

The technical subcommittees appointed to serve the Strategy Committee first assembled details on the past history of use, modeled the projected use if no action to reduce demand occurred and nothing was added to the current supply. This indicated when draconian restrictions would be necessary if there were no change in demand

(about 2015 for Victoria). The sub committees then outlined possible measures to reduce demand in households, industry and municipalities and identified possible additions to supply. In all cases, the best estimates were made of the volume of savings each measure was projected to yield and whether the measure would be achieved by enforceable regulation, incentives, education, price controls, or combinations of these.

Some measures, like banning the hosing of paths, save relatively small amounts (300 – 500 mL/yr) but are nonetheless important because of the effect on people's outlook towards water, encouraging them to regard it as a scarce commodity.

The subcommittees also outlined the actions that could increase supply. These cover such matters as larger extractions from existing supplying rivers, ceasing to log catchments, upgrading water treatment plants to allow an existing source to be added, and a number of recycling measures. These latter include rainwater tanks, stormwater and greywater reclamation, water sensitive urban design, sewer mining and recycling of treated effluent following various treatments to improve quality and safety, such as membrane filtration or reverse osmosis.

All this information was made freely available in printed form, on the web and through presentations to special interest groups, "talk-back" radio and TV, along with an invitation to respond to the various measures and to offer any further suggestions. In Melbourne, this process elicited 3510 hits on the website and 309 submissions. The Strategy Committee took information from the submissions and from reviews by experts of potential measures and issues and assembled these into four possible management scenarios. The scenarios offered the public the chance to see the effect of implementing a management regime with major constraints on demand with no increase in supply, as against other scenarios where constraints were less draconian and the supply was somewhat increased.

The Strategy Committee developed a fifth scenario incorporating its preferred set of measures. All the scenarios, along with modelling of the long-term effect of each scenario, were again put before the community for comment. This elicited over 5000 hits on the web and 316 submissions.

The choice of measures in the preferred scenario was based on the Committee's best judgement that the scenario would achieve

- a significant saving in water from each measure
- an enjoyable lifestyle, despite implementing the measures
- community acceptance of the measures (as guided by community submissions)
- compatibility with government policy
- significant take up of measures through regulation, incentives and education
- cost effective outcome
- acceptance by environmental groups
- adoption of best practice in water use by industry and municipalities
- a minor increase in supply, within the current allocation permitted by the government

- meeting the terms of reference regarding community involvement and living within the current water allocation
- a review of the pricing structure
- a mechanism to fund conservation measures

The Strategy Committee considered all the responses to the scenarios and the material in reviews it had commissioned and prepared a final report (2002). This offered some minor modifications of the fifth scenario and 23 recommendations, as a way forward for the government to consider. Table 1 lists the volumes of water saved for each of the proposed measures and the increase in supply recommended; Table 2 summarises the projected outcome for the Melbourne area by the year 2050, if the Strategy's proposals were adopted by government and the community.

The government developed a Green Paper followed by a White Paper (2004), Securing our Water Future Together. The White Paper endorses most of the recommendations of the Strategy Committee relating to sustaining Melbourne's water resources, as part of the government's response to sustaining water resources across the State as a whole.

References.

1. Water and the Australian Economy, 1999 Australian Academy of Technological Sciences and Engineering.
2. Planning for the future of our water resources, Discussion Starter 2001, Water Strategy Committee for the Melbourne Area.
3. Planning for the future of our water resources, Strategy Directions Report, 2002, Water Strategy Committee for the Melbourne Area.
4. Planning for the future of our water resources, Final Report, 2002, Water Strategy Committee for the Melbourne Area.
5. Securing our Water Future Together, Victorian Government White Paper, 2004

SUMMARY OF RECOMMENDATIONS

RECOMMENDED DEMAND REDUCTION MEASURES - Table 1

Measure	**Lever**	**Annual Water Savings by 2050**
AAA shower roses (commencing 2005)	Regulation	20,000 ML
AAAA washing machines (commencing 2010)	Regulation	27,000 ML
Garden practices (drip watering, tap timers, mulching, water saving plants)	Education	4,000 ML
Voluntary restraint on sprinkler use on total fire ban days	Education	500 ML
No hosing of paths and driveways	Education	300 ML
Pricing (next pricing review)	Regulation	10,000 ML
Industry – water audits and management plans (commencing 2003)	Education and Assistance	9,000 ML
Open space managers (institutional, commercial and local government) – water audits and management plans	Education and Assistance	2,000 ML
New Subdivisions – rainwater tanks and/or recycling to achieve 35% substitute use (commencing 2004)	Incentives	9,000 ML
Existing Development – rainwater tanks and/or recycling at individual properties (commencing 2003)	Education and Incentives	4,000 ML
Other ongoing measures including shorter shower times, brushing teeth with tap off, use of swimming pool blankets, commercial car wash with recycling	Education	2,000 ML

MEASURES TO INCREASE SUPPLY

Measure	**Additional Water supplied per year**
As appropriate at the time (for example: Reconnect Tarago Reservoir)	21,000 ML

Table 2
Effect on the use of water if the Strategy Committee's recommendations are adopted by 2050.

Effect by 2050	**Water (GL)**
No reduction	659 used
Recommended scenario	571 used
With increase to supply	21 added
Water used/head	**L/day**
Currently	380
Recommended	327
By 2050, aims to be	23% less