

The Secretary  
Environment and Natural Resources Committee  
Parliament of Victoria  
Parliament House  
Melbourne 3002

08/10/08 Update from 28/08/08

CHAIR: The Hon John Pandazopoulos MP

Dear Chair and Committee

**AMENDED SUBMISSION TO THE VICTORIAN PARLIAMENTARY INQUIRY INTO  
MELBOURNE'S FUTURE WATER SUPPLY.**

**1 INNOVATION THE KEY**

**The future of Melbourne's water supply depends on innovation, not on augmenting supply.**

The need to focus on innovation is imperative as continuing drought and the drying of the Murray Darling Basin have been confirmed by scientific reports.

Now is one of those times for innovation for the urban water and sewage systems of Melbourne and Victorian urban areas generally.

**Note that currently, the vast volume of water Melbourne consumes is necessary to run the current and expanding liquid waste system, not to provide for the essential liquid needs of people!**

Whilst the Goulburn Valley (Food Bowl) Infrastructure Modernisation Project is useful, the concept of trading off water out of the dry inland Murray Darling Basin catchments, which includes the Goulburn River and its Lake Eildon storage, to high rainfall coastal catchments like Melbourne in the Yarra Valley is unsustainable.

Linking the proposed North-South (Sugarloaf) Pipeline project to the Goulburn Valley Foodbowl Modernisation Project has no basis in logic or sustainability. One does not depend on the other. The \$300m which is supposed to be paid by Melbourne water consumers towards the Foodbowl Infrastructure Modernisation Project, is significant only in that it will pay for part of the North-South Pipeline.

The North-South (Sugarloaf) Pipeline Project does not meet the critical triple bottom line of social, environmental and economic net benefits to people north of the Great Dividing Range or to the people of Melbourne. Here are some of the reasons why.

**2 ONE VALID AND CHEAPER OPTION**

There are much less expensive and better alternatives for Melbourne, such as ASR, (**Evans B** March 2008 "ASR - Aquifer Storage and Recovery") (Attached). NOTE: Realize that if this paper is converted to a bitmap file, metadata crucial to the paper will be lost from the web display.

There is also the opportunity explained below to change Melbourne's water system to fit current climate constraints and Melbourne's future needs.

**3 EVERYONE CAN MAKE A DIFFERENCE**

People who walk out at night in Melbourne tell of garden sprinkler systems on nightly during summer.

Parks & gardens workers tell of potable water being irrigated onto street trees in new western suburbs 24 hours a day.

Every individual and every organisation or corporation needs to get serious about thrifty use of water.

Our tourism industry needs also to take responsibility.

There is no shame in recognising, and in having visitors to Melbourne realize that water is an issue here, and that we require everybody, including tourists to economise on their use of water.

It is incumbent on the Victorian Government to insist that even (or especially) five star hotels require their clients to use water wisely just as it is for the Government to educate and enforce the general public to do the same.

**There is enough for the environment too, if we choose sustainable systems and sustainable practices.**

#### **4 THE NEED FOR ACCURACY & TRUTHFULNESS**

Why is it that we have figures bandied around that Melbourne has reduced its water usage by 25% and the Minister for Water giving spurious information like: "Melbourne's water use is the lowest since 1983." How is that date relevant to a growing Melbourne in 2008?

For Melbourne Water, the Premier and the Water Minister to say that we need X amount of water because we have only sufficient water in storage to last 1.5 years is trite.

Melbourne can change its water use quite drastically, and the idea that Melbourne can get back on no water restrictions is unrealistic, not a statement of authoritative stewardship in a period of climate change.

As has been pointed out by Adelaide University scientists recently, there is also an imperative to audit all water resources, and water use in the Murray Darling Basin (and in all other surface and groundwater catchments in Australia) and those findings should be immediately available to everybody.

We simply do not know how much or how little water is in the system, though inflows are regularly estimated. (**Murray Darling Basin Commission** July 14 2008 Newsletter)

In the light of the Victorian State Government policy to 'network' (accurately read 'drain') catchments across the State to service growing metropolitan areas ("Our Water Our Future", 2007 Vic Govt), it is also necessary to be wholly truthfull about the way in which it is intended that water flows in these network components.

Currently, the pipelines proposed are often referred to by the State Government as X to XX, whereas the truth is that the water will flow from XX to X. (**Melbourne Water** website August 2008)

Further, the word 'network' is misleading. The truth is that they are drains out of one area into another. The difference between

gravity fed drainage and pumped drainage needs to be recognized in the volumes of water which are the ultimate capacity of the pipelines (and in the resulting CO2 emissions from the use of power).

## **5 INTENTIONAL OR UNINTENTIONAL INNACCURACIES**

### **5.1 STATISTICS**

According to the Minister for Water's figures given on ABC radio in September 2007 and in early 2008, Melbourne has reduced its water consumption over 2006 and 2007 (to the end of November) by 16%. (**pers. Comm. E Adamson with Mr Holding** via ABC regional radio, comperre Joseph Thompson, Apr 28/09/07 & at a later date).

In recent months the water use is rising compared with the previous year. (Melbourne Water website) Yet Lake Eildon is about 1.5% less in volume than this time last year, (Goulburn-Murray website) with its current capacity about 650 GL (at 28/08/08).

Surely the crisis should be recognized as deepening, and any previous decision based on pre-2004 rubbery figures, (**Our Water Our Future** 2005 Vic Govt) to pipe water out of the Goulburn and therefore out of the Murray Darling Basin should be scrapped.

For comparison, as members of this inquiry will know, Melbourne uses about 420 GL per year. Irrigators in the Goulburn Valley Foodbowl use much more in the course of producing over \$3 billion worth of food over a year. This year no allocation at all is available for the start of the irrigation season. (G-M Water Media Release 11/08/08)

Questioning accuracy and being critical, it is unacceptable that early Victorian Government documentation of the North-South pipeline capacity stated 105GL, whereas later documents state 75GL. Both may be possible, but 150GL may also be possible with longer pumping periods or higher pressures. How can the public believe it when Government makes a cap statement (75 GL is the maximum that will be extracted)?

### **5.2 POLICY BASED ON UNVERIFIABLE DATA AND MODELLING**

It is scandalous that the information underpinning the policy decision to drain water from the Murray Darling Basin to Melbourne and Geelong and capture more water resources via the North-South (Sugarloaf) Pipeline Project is based very largely on unpublished data and modelling which has some major flaws.

**To their credit, the DSE computer modelling professionals will include a disclaimer in their model's file. This recognizes the limitations of the model.**

The public has no chance to verify the basic information on which these policies are based. When I asked a senior public servant for some of this basic science, the reply was: "No, you'll only misuse it."

Why should the public believe any statement which is asserted to be based on 'the science', when 'the science' cannot be examined by them?

Trends confirming the failure of 'the science' for the Murray Darling Basin are plainly evident.

The report by the Murray-Darling Basin Ministerial Council of May this year showed that projected environmental savings had not come within a bull's roar of projected achievements, though it keeps on issuing statements of hope about achieving the desired water savings. (**Flett D, Baxter P, Hillman T**, MDBC 2008 Audit of the Living Murray Implementation 2006/07 Report of the M-D Basin Ministerial Council).

In fact the Independent Audit Group which had carried out the audit of the Living Murray Implementation for 2006/07 made it clear that total failure of most of the objectives was the reality.

To ring the warning bells even louder, the July edition of **Murray System Drought Update** this year showed the 11 year average of diversions of water for Victoria totalling 830 GL from an 11 year average of 1550 GL. 2008/09 irrigation season looks like being much worse for Goulburn Valley Farmers and the Murray diverters within Victoria.

For the Victorian Government to pay lip service to the reality that 1 The food producers, 2 The communities of people and 3 the environment of the Murray Darling Basin are so evidently starving for water is to avoid being responsible in Government.

To say that Melbourne needs more water to cater for its existing and future needs is to ignore the way that water is bulked and used wholesale instead of strategically. This is also irresponsible.

Many opportunities exist to direct potable water where potable water is needed and to use less than potable water just as appropriately. This requires a change in thinking by Government and the water distribution agencies.

It also requires infrastructure planning and changes.

One which has occurred is the unbundling of water rights from land.

While this unbundling allows redress of water rights oversold by States and more recently some (on paper) adjustment with participation of the Commonwealth Government, the result already being seen is fragmentation of irrigation areas, particularly the margins of those areas, such as Tragowel Plains.

Allowing that it might have been originally unintended that water might be moved out of the Murray Darling Basin south of the Divide, the fact is that the intention now is to do just that.

Because the dry inland is more marginal for the greater part, and subject to greater variation in rainfall than catchments south of the Divide, this abrogates basic principles of sustainability.

Under whatever pretext and on whatever scale, creating a water deficit in the north to serve coastal urban metropoli simply makes no sense.

### 5.3 GOVERNMENT IS RESPONSIBLE

This fact of course was recognized in the Water Act 1958 in requiring that the Government is empowered to raise charges and keep the system up to scratch.

Past Victorian governments have been negligent in not applying

those funds raised and upgrading the infrastructure for irrigation.

But there are three areas where water economies can be made which can conserve urban water availability for critical human needs:

- 1 Irrigation supply south of the Great Dividing Range.
- 2 Water supply reticulation, where potable water can be segregated from water users who don't need (any or as much) potable water.
- 3 Water based effluent systems from industrial and urban areas.

The old water based effluent systems of Melbourne cannot continue. They require vast amounts of water to make them work.

Melbourne Water is being irresponsible in its use of monetary and water resources by not reviewing its ageing system and its efficiency in light of droughty conditions whose trends have been apparent for at least 10-20 years.

## **6 MELBOURNE'S WATER FUTURE**

### **6.1 NEW SCENE**

Here's one totally new scenario.

#### **Why does Melbourne have a potential water problem?**

1. It has a delivery system delivering bulk high quality water for a whole range of purposes, most of which don't require drinking water standard.
2. The delivery system does not differentiate the quality needs for different purposes.
3. It has an effluent system designed to operate using large quantities of water.
4. The effluent system bulks all kinds of wastes which can be carried by liquid into one system, instead of differentiating at the input end.
5. We have changed the way Melbourne handles its recyclables; in similar fashion changes must be made to other effluents.

#### **6.1.1 DRINKING WATER**

All drinking water can currently be catered for from 4 alternative sources:-

1. Dams & the resultant bulk water via the reticulation system.
2. Tanks fed from individual user roofs or collective rooves in an area.
3. Bought packaged water as many people purchase now. This indicates that people will individually pay for what they want in convenient water.
4. Recycled water. This is a 'perceived problem' because black grey and industrial water end up in the same effluent. Without the black, would it still be a problem?
5. Storm water re-use. This is not recycled water in the latest definition by Melbourne Water, 'Recycled water' therefore needs a revised definition.

**This inquiry needs to ask and have the accurate answer to the question: "What is the percentage and volume of water from Melbourne's water supply that is actually used for drinking and food preparation? (not washing up)."**

## 6.1.2 PERSONAL EXPERIENCE

Currently, my wife and I together use less than 2 litres of boiled water per day (perhaps four in the height of summer). Whatever other water we use does not have to be potable and some of it can be downright dirty!

Occasionally it is!

We pump water from the Delatite River into a hillside tank. That serves all purposes including nursery irrigation.

No filters, no chlorine, no problems, as long as people know, understand and don't pollute our stretch of river with human faecal matter or animal carcasses.

The 450l tank attached to one slope of the house roof is a reserve in case we ever can't drink the river water.

That's the kind of differentiation which needs to be made for Melbourne water.

## 6.1.3 THE EFFLUENT DILEMMA

Fifty to 100 years ago, Melbourne relied on some sewers piped to bay and ocean; septic; phenol & lysol contaminated smelly pooh bins collected weekly and dumped in land fill, or worse, the contents dumped in river or sea.

Since then, the engineers designed the water based system and for expediency, put all three classes of effluent into many of these systems; black (or solids), grey, industrial, and in many cases storm water.

(Note the recent reference somewhere to recycled irrigation water for growing vegetables being too salty for some vegetable growing situations because the volume of water from domestic waste has reduced, making the level of salts from industrial waste too concentrated in the system).

## 6.2 NEW DESIGN FOR THE 21<sup>ST</sup> CENTURY

### 6.2.1 NEW DESIGN

It's time to redesign urban wastewater systems to make positive the previous negatives about liquid waste and so save vast amounts of water.

In similar fashion to the changeover of every gas stove in Melbourne from one kind of gas to another, which occurred many years ago, it is possible (though at much greater cost) to retrofit and require new users to fit different systems.

Perhaps the most practicable strategy for doing this is incremental, using some intermediate stages.

### 6.2.2 SEPARATE DRINKING WATER

One route in to this renewal is to create a **separation** between drinking water and the others. Then there'll be heaps of water for the future in the existing dams. No need for new dams.

Even at 32% capacity of Melbourne serving dams south the Great Dividing Range (Melbourne Water website), there is plenty of water for Melbourne's water future.

Add in the ASR option and Melbourne's water future is indeed rosy. (Axial Flow submission to this inquiry, 2008; see also EVANS B reference above)

### 6.2.3 ONE WAY IS WATER TANKS

This can be done using water tanks, (despite the current Water Minister's statement that drinking water from tanks is not OK for city people), have people either boil the water for drinking or filter it; depending on whether the problem is likely to be bacterial or heavy metals; using one the many systems available commercially right now.

The reason that rural people survive and thrive is that they have resilient guts. That would be good for urban people too!

Rainwater tanks of small to medium size can save around 8.4GL per 100,000 households. (Coombs P.J. & Kuczera G. 2003 in Proc. 28<sup>th</sup> International Hydrology and Water Resources Symposium, Wollongong NSW. "Analysis of the Performance of Rainwater Tanks in Australian Capital Cities".)

However, Storage of greywater for garden use in tanks is not part of the solution; it's a mediocore adjunct tool for individual sites because the volumes are insufficient to provide sustainability to those sites. Furthermore, the grey water is ultimately toxic to many garden plants. e.g. Borax in many washing powders; boron - a trace element toxic to grasses at 34-63mg of Boron per Kg (Hosking W J et al 1986 Trace Elements for Pastures and Animals in Victoria. Dept Ag & Rural Affairs Vic)

### 6.2.4 ANOTHER IS TO PIPE IT

Another route is to reticulate potable water separately from the current system. As the volumes will be relatively low, the potable pipes will be small by comparison to the present pipes.

## 6.3 EFFLUENT

### 6.3.1 OUTWARD BOUND FAECAL SEPARATION

A route outward is to create a **separation** of black effluent (faeces) from liquid. As faeces compost well and create excellent fertilizer, this is important and beneficial to the community. The collection of dry faecal matter, or its reuse in gardens is feasible at low cost, using low cost handling methods.

It is also possible to use locally centralized depots for the assembling and use of this matter. Yes, there is some health risk; but it's very small, and containable, treatable and avoidable, through education, auditing, and enforcement.

There's much more risk in having insufficient water to run the current system and the expanding Melbourne new systems.

**Note that currently, the vast volume of water Melbourne consumes is necessary to run the current and expanding liquid waste system, not to provide for the essential liquid needs (critical human needs) of people!**

### 6.3.2 AUDIT & SEPARATE INDUSTRY WASTES

Another necessity is to audit and separate incompatible industry wastes from the system and have those industries generally pay for their own pollution more directly.

The costs can be passed on to the consumer while at the same time providing an opportunity to make the costs of polluting industries more accountable and more transparent.

As has happened many times in the past, industry often finds a way to make a profit from cleaning up their industry effluents even without passing the costs on to the consumer.

### 6.3.3 REALIZING THE LIQUIDITY - EASY TRANSPORT

When the segregation of these systems is occurring, the extent to which **the proportion** of liquids to solids will rise will be readily measurable.

That segregation will also ensure that the existing system for treatment of liquid waste increases in efficiency and those effluents will have less toxicity especially through industrial salts, incidental dyes and effluents.

## CONCLUSION

**The future of Melbourne's water supply depends on innovation, not augmenting supply.**

1. Auditing of water resources is needed overall, including actual drinking water needs.  
**If a population drinks 5 litres per day per head and Melbourne is heading for 5 million people, consumption of potable water per day would be 25 megalitres...9.125 Gigalitres per year, compared with current usage of 420 Gigalitres.**
2. Strictly potable water needs are a relatively small volume of water.
3. The base data and modelling on which many water decisions are made is flawed. Its accuracy is unverifiable. This needs to be addressed and the base data made accessible to everybody.
4. Gigantic expenditure decisions by Government, and its agencies, are being made on flimsy and flawed evidence, resulting in projects such as the North-South (Sugarloaf) Pipeline Project which does not meet triple bottom line criteria, especially for the Murray Darling Basin and its Victoria communities.
5. These problems give the public little confidence in government. The unbundling of water from land and the sale of water across catchments will result in privatisation and monopolisation of water resources and disempowerment of communities. It is not sustainability.
6. Currently water essential for human needs is delivered together in the same distribution system with water for ancillary needs. This is a waste of vast quantities of potable water. It needs revision.
7. The current structures for conducting effluents for treatment and disposal is inefficient. It needs revision.
8. A change in approach, mind set and paradigm is needed, with a redesign of systems in light of current constraints and new

parameters and a 21<sup>st</sup> Century paradigm.

9. Everybody needs to participate actively in using less water, and in using appropriate quality water for various purposes.
10. Those various qualities of water need to be available separately.
11. Alternative options such as tanks for drinking water, ASR, and parallel drinking water reticulation will allow reticulation of lower quality water in current distribution systems.
12. Storage of greywater for garden use in tanks is not part of the solution; it's a mediocre adjunct tool for individual sites because the volumes are insufficient to provide sustainability to those sites and the end result is toxic.
13. The present water supply dams south of the Great Dividing Range are more than sufficient for Melbourne's water future, even at present levels, providing the above changes are made.

Yours sincerely

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## References:

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**G-M Water** Media release 11/08/08 on large water shortfalls before allocations can begin.

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**Murray Darling Basin Commission** July 14 2008 Newsletter

**Murray Darling Basin Commission** July 14, 2008 Murray System Drought Update

**Victorian Government** Our Water Our Future 2005