

30 January 2008

Committee Secretary  
Senate Environment, Communications, Information Technology and the Arts Committee  
Department of the Senate  
PO Box 6100 Parliament House  
Canberra ACT 2600  
Australia

**Public Submission to the Australian Senate on the ‘*Inquiry into the Water Amendment (Saving the Goulburn and Murray Rivers) Bill 2008*’**

I am writing to provide information for the *Inquiry into the Water Amendment (Saving the Goulburn and Murray Rivers) Bill 2008*. I hold a Master of Science degree in Civil and Environmental Engineering. The main area of my study for this research degree was the sustainable development of water resources. It focused on water governance in transnational river basin systems from an integrated and multi-disciplinary standpoint.

Recently I have been working on the issue of a more responsible framework for global environmental governance, from the perspective of water, public health and climate protection. This study will soon be published in a book along with a collection of such working papers. The book aims at suggesting to the international development community a more holistic approach towards water management and sustainable development.

This submission, challenging and prepared in haste, is a preliminary draft on such issues from a more Australian perspective. It begins to reexamine comments that were provided in my submission to the Government on the *Draft Water Amendment Regulations (2008)*, which is attached for your information. I hope to present it at a UN Conference in June. It is my hope that such preliminary research might in some way assist the Committee.

Other relevant research I have participated in lately includes a strategic report on urban water governance in Australia (2007) that is currently before the Legislative Assembly of the ACT; and the global challenge of financing and governance of access to adequate water and sanitation in developing nations from the public health perspective (2005). This latter paper was published and launched in an event at the World Economic Forum. This submission draws on the findings of the above.

Yours Faithfully,

David Tipping

## Why fresh water is in the best interest of Australian Society: in pursuit of prosperity and happiness

We see the end result of the unreasonable use of water every day. Our choices play out in terms of pollution, over-allocation, widespread environmental degradation and ill health. So just how did humanity get to this crisis point, where we place human beings *at risk* and their health and welfare subject to market forces? Water governance became *adequate* when our Australian society came to put the ‘public protection of health’ first in the 19<sup>th</sup> Century.

As a result of the water scarcity in Australia, we are now planning for a very unreasonable use of water: processing of sewage and industrial wastewater for our personal consumption and hygiene. People have been trying to make money off the purification of sewage for over 150 years. Why should any community have to bear such potential negative consequences, for the financial benefit of the few?

Section 100 of our Constitution states that “the Commonwealth shall not, by any law or regulation of trade or commerce, abridge the rights of the State or the residents therein to the reasonable use of waters of rivers for conservation or irrigation”. **It seems to be of social and sanitary importance - a public guarantee of pure and fresh water - to conserve the health of our citizens, by preventing disease, and ensure a sufficient allocation of water for our national food security, under the advancing conditions of local and regional climate change.** Could this be an obligation, to “equitably share entitlements to the beneficial use of water”, or “not to inflict unreasonable injury” on the rights of persons, including those organised as communities?

### *The risk and threat to a healthy public*

There is both risk and threat associated with the processing of sewage for human consumption and hygiene, as a substitute for fresh water. Despite modern technology and careful operation of water and wastewater treatment plants, treatment processes have the potential for incorrect operation and/or failure. Some pathogens are difficult to detect, and current laboratory techniques lack the precision and specificity to measure low levels of some contaminants, particularly parasites and viruses. The technologies used for detection are also expensive and time consuming.

Inline techniques for monitoring operational performance are not yet cost effective, and results are often not yielded in a timely manner, when actions to prevent disease outbreaks could be taken. It is not yet feasible to conduct real-time monitoring of important water quality parameters, or to realistically detect the failure of advanced treatment technologies or human errors, as the operational and laboratory monitoring techniques are still to be developed. Technological failure and human error occur every day.

Microorganisms present a wide array of health threats to societies. Complex diseases adapt and respond to change in the environment, by emerging, resurging, and more recently, by developing drug-resistance. The World Health Organisation (WHO) stated in 2001 that there were 1415 species of infectious organisms known to be pathogenic to humans. They confirm that water, sanitation and hygiene-related disease remain a leading cause of illness and death worldwide, that the spectrum of this disease is expanding, and that its incidence is also increasing.

New diseases are emerging at a phenomenal rate. Nearly half of all emerging pathogens are viruses and prions, which are extremely difficult to detect and remove during the treatment of wastewater. We have known about the distribution of many of these complex diseases for a long time. The Australian Government Agency for International Development (AusAID) just recently clarified the scope of the health risk, confirming that “new pathogens, particularly viruses, remain unpredictable and continue to emerge and spread across countries”.

The human health risk presented by residual chemical contaminants, radiological substances and nanoparticles from industrial waste and other pollution after processed sewage treatment, is not yet well established in the literature. For example, the Organisation for Economic Co-operation and Development (OECD) confirm that it is still unknown whether *free* nanoparticles exacerbate even pre-existing medical conditions in humans. They add that there are “major gaps” in knowledge concerning “the detection and measurement of nanoparticles”, and “all aspects of toxicology and environmental toxicology” - so the adverse effects of ingestion and absorption of nanoparticles by humans and other living systems cannot be predicted. In one case, contrary to all expectations, it was recently found by researchers in Europe that cerium dioxide particles used by industry were not fully removed from the industrial waste stream during wastewater treatment. Around “6 % by weight” of the nanoparticles component escaped practically unchanged, due to a living response by the bacteria in the biological separation stage of the test wastewater treatment plant. The series of experiments suggest cerium dioxide “could elude treatment”; it is unknown how humans will react with such nanoparticles. The principal investigator confirmed the scientific community “were still at the beginning of (such crucial) nanosafety research”.

The contamination of water supplies with both processed sewage and industrial wastewater is detrimental to the public’s health and the environment, and by extension, our national health, safety and welfare. In fact there is a ‘real’ question over the limits of detection for many pollutants in water, most of which are currently not measured or regulated and have unknown toxicity. The debilitating impact of water chemistry-related disease is in fact not understood well, but the ‘real’ cost to national economies has been seen before. For example, there are reported to be between 35- and 77-million persons in Bangladesh today *at risk* of disease, from using water containing naturally occurring inorganic arsenic for their essential consumption and hygiene needs. It has been estimated that up to 21-million of these persons could be exposed to arsenic at concentrations above 0.050 mg/L in drinking water. Sustained consumption at this level has been reported to result in 1 in 10 human beings dying from cancers. This public health emergency has already caused at least 100,000 cases of skin lesions, including in children. Large numbers of cancers are predicted; infants and children are more vulnerable to such environmental threats, the impacts of which may be irreversible. The value of such costs to societies cannot be predicted; the sum of the losses and the extent of the risk are then unknown.

Yet recent steps by the Commonwealth Government have downgraded formerly high drinking water quality standards to mere, unenforceable ‘guidelines’ – constituting the removal of a measure of a public health protection – which now seems to make it suitable, and thus safe, to serve such processed sewage and industrial wastewater to citizens for their personal consumption and hygiene needs. There should be a “concentration of responsibility” on those who have the best means for and strongest interest in disease prevention. In light of the elevated risk to the public, such government decisions that have gradually yet steadily reduced water quality standards should be reviewed - in the interest of the ‘public protection of health’ of all Australians, who may now be exposed to the high risk of infection by preventable diseases that know no geographical boundary.

The public cannot be expected to be fully aware of all the dangers to which they are exposed through drinking water. There is also no effective means for individuals and families to object to such increased risk and threat to which they could be exposed, by unknown agents and factors, from the local to the global level. Given that public authorities in Australia are only just today discovering that legal food additives induce attention deficit hyperactivity disorder (ADHD) in school children - although some enlightened European governments moved to ban them years ago – do the Australian people need to now question the values judgement of technocrats, who may have been self-interested or appeasing political and economic interests?

The World Health Organisation confirms that international drinking water guidelines are supposed to be used by “water and health regulators, policy makers and their advisors, to assist in the development of national standards”. Has legal responsibility for water quality in Australia today essentially been shifted by State and Territory governments back on to households? If so, the selected path of economic efficiency should be of major concern to all Australians seeking a good social life free of disease for themselves, their children, and their children’s children.

Great care must be taken with such decisions at the public good/political economy decision-making interface. A person’s health and safety is their wealth and independence. In the pursuit of prosperity and happiness, there is a need for “adequate protection” against such serious illness and effective preservation of household income and savings - the benefit of a public good.

Such decisions - to downgrade water quality standards and to serve processed sewage and industrial wastewater to citizens for their personal consumption and hygiene needs – now limit the principal of preventative legislation. They appear to construct systematic disadvantage that profoundly undermines the health and well-being of certain persons; hence creating new vulnerabilities. In terms of disadvantaged persons, it may not be indigenous and immune-compromised persons only who are more susceptible to such emerging, resurging and drug-resistant disease. The Australian demographic also has many pregnant women (and those wanting to be), infants, children, weak and frail persons, elderly citizens, and those other persons suffering from serious illness - all of whom may become more susceptible to such disease. Such fundamental decisions that influence the right of persons to water and to health should be duly considered by health principles and legal ethics panels.

Public health is a responsibility - resting on all those persons with influence or power - that cannot just be shaken off. The historical experience of Britain suggests that governments and service delivery agencies became interested in applying proper preventative measures for water quality and human health; for when “poor working men, with their wives and families” became enlightened as to the public profit to be made, the government was quickly made *legally responsible* for the associated human and economic losses. Sir Edwin Chadwick, one of the great pioneers in the field of sanitary science, in fact established that such public insurance “against the consequences of excessive mortality” had to be “guarded”. The many subsequent *Royal Commissions of Inquiry* established “the best means” for prevention, and that there was a multitude of human factors that needed to be duly considered in assuring the integrity of the fresh water supply chain management system.

It is not wholly clear that the Commonwealth Government’s water quality choices are good for Australian society, or what the trade-offs have gained for citizens. Such preferences appear to be to the detriment of a spectrum of Australia’s political classes. Yet these “operations have reasonably been affirmed to be the duty of government”; it is “only the preventative service, by sanitation, which materially reduces sickness and mortality and goes far to empty hospitals”. The people of Australia inherited the knowledge that they must regularly make contributions into these essential systems of public fresh water insurance. Most willingly do so, in support of responsible government and its established duty of care.

In a free and democratic society, the social benefit of universal water quality standards seems to be important *values*: of “justice, equity, good neighbourliness, and the prohibition of the abuse of rights”. The lessons of the *sanitary era* in Britain suggest societies cannot afford for there to be any such rivalry over clean, fresh water or exclusion from pure, fresh water; as such challenges the survival and well-being of persons, and in fact, the underlying salubrity of whole towns and cities. Citizens should be given a fair chance to adequately express views - that coincide or differ - in such debates that put individuals, families and communities *at high risk* of significant harm, from such unsecured service delivery.

*The lessons of the sanitary era need greater consideration*

History tells us that sanitary advances were lost by civilisation once before. The art of sanitary engineering declined from around 2500 B.C. through to the Dark Ages. The Romans had built public aqueducts and sewers, but after the decline of the Roman Empire, the decline of sanitation was hastened. Urban populations decreased in size and returned to more sparse rural communities, as a direct result of plague and pandemics. In Britain, it was not until the 13<sup>th</sup> Century that construction works for local water supply augmentation can be found in the records.

The City of London had at first been supplied with water taken directly from the Thames River, including from the streams flowing under its streets, and from other local ponds and wells. These early water sources were quickly fouled, or they simply failed. In 1236 the King of England took corrective action, to prevent unnecessary human and economic losses, and water sources were diverted into London from its hinterlands.

There were numerous water supply developments over the next 350 years. As London continued to grow, more industries were established, more houses were built, and all of the local rivers and streams were gradually transformed into open sewers. Water was first directly supplied into some of the better houses in 1594, and the demand for increased quantities of it continued to grow. In the 17<sup>th</sup> Century, further concessions for power over water distribution were then granted to private companies, which extended services to some select parts of the city and further increased demand.

There was, however, no attention paid to the resultant need to safely dispose of local wastewaters. This resulted in widespread spoiling of land and surface water and aquifer systems. The environment created the perfect conditions for the transmission of infectious disease epidemics. There was frequent, excessive illness and premature death on an unprecedented scale. By the mid-19<sup>th</sup> Century around ten thousand lives were “destroyed” each year in London alone. This was a “great public injury” - more so for that largest and most helpless class of persons trapped “by the presence of disease, and the poverty it produced” – and it presented a far greater loss than that of any war.

Under the *Public Health Act of 1848*, powers were vested under a scheme of local government whose responsibility became the improvement of the sanitary conditions of towns and populous places. The role of the Board of Health was to put an end to preventable disease and the associated great loss of life, and prevent the associated economic losses of the city. This sanitary idea was the ‘public protection of health’.

Public health was cost effective, though this was dependent on the supervision of engineers and master drainers. The widespread application of sewers and drinking water treatment then coincided with the recognition of the germ theory of disease, and the culmination of experience and observation that led to Dr. John Snow’s 1849 epidemiological study on Asiatic cholera (i.e. the link between sewage getting into the water supply and the spread of cholera). In 1850 - after 22 years of Official inquiries - a Court of the British Government positively established that the private water companies were facilitating and promoting a great dereliction of public duty, by ignoring and failing to take due care over the quality of water delivered to individuals and families. This was a serious failure that could have pulled Britain back to square one; an important lesson was learned.

Good public health, supported by access to water and sanitation, was recognised as vital for the ‘real’ challenge of civilisation. It was realised that no part of any crowded district could be neglected, without diminishing the protection of all; such human and economic risk to society was unnecessary and unjustifiable. The treatment of water as an economic good (and therefore subject to economic efficiency) was thus set aside, in preference for providing access to water and basic sanitation as a public good and for the interest of society as a whole.

Conditions “of health” had declined as cholera and other epidemic diseases started to spread widely in Britain. For example, the second cholera pandemic in 1848 struck approximately 30,000 persons in London; taking an additional 15,000 lives. The disease took a heavy toll – across all strata of society - in terms of illness, death, disability, distress and suffering. This greatly sapped the vitality and efficiency of those who recovered; the impact on household income and savings was impoverishing. The Health of Towns Association went so far as to call it the *fever tax* – “the heaviest of all taxes”.

Victims of public neglect and indifference, the physical and mental health condition of the population had been severely degraded. In one town life expectancy had been reduced to a low of 24 age years; at a time when the national average life expectancy was reportedly limited to just 45 years. With improved source water quality, disinfection of the water supply and other systemic improvements, there were profound public health advances made in Britain; it seems the sanitary reforms may have greatly contributed to making it possible to “diffuse the blessings of education”, which had been cited by the *Health of Towns Association* as being “indispensable to the elevation of the people in morals and happiness”.

Pure, fresh water could only be secured and protected by British society through such process entailing multiple *Royal Commissions of Inquiry* in the public interest. The long awaited *Public Health Act of 1875* was a “great improvement on previous sanitary legislation”. It gave a Local Government Board limited powers to “issue regulations and suggestions for the prevention of epidemic diseases”, to exercise “a general supervision over all sanitary matters”, to have a say “on local taxation”, and “by provisional order”, to define sanitary boundaries and “make alterations in existing sanitary areas”. “If a local authority was remiss in any of the following duties: a) providing sufficient sewers; b) maintaining existing sewers; c) providing proper water supply when such could be obtained at a reasonable cost; d) or any of the duties imposed upon them by the *Act*”, the board could enforce the proper performance of such duties by the defaulting authority, or appoint some person to remedy the evil”.

The generation of new knowledge resulted in new responsibilities, including for those persons with power and influence, who it was acknowledged were “really chargeable with the consequences”. Through sanitary reforms, the Government subsequently came to secure and care for the people’s prosperity and happiness. This was the partnership that secured the “raising up” of a healthy population; through a correction based on rights, equity and tranquillity.

Water came to be shared and sewerage systems were installed in the cities of today’s developed nations in the public interest - to protect the public’s health. As public hygiene and sanitary science evolved towards the end of the 19th Century, the underlying protection afforded by access to effective sanitation was revealed. It took several generations, but the health, strength and happiness of whole populations continually improved - to the point where life expectancy was considerably increased.

This *sanitary era* evolved through a common sense, at a time when the science was not fully conclusive. Sanitary engineers insisted on the development of *holistic* water and sewerage systems. Such advice was based on the general principle to supply clean, fresh water for human consumption and hygiene, and to safely remove the sewage discharge of the population - to improve human health, and the integrity of human settlements. The secured protection of water quality in rivers, streams and other water sources was central to such *holistic* aim, along with the need to place these water and sanitation systems under one common jurisdiction – to guarantee pure, fresh water for the conservation of national populations.

John Stuart Mill, the foremost British economist of the era, stated this was a question of general policy, not political economy. He conceived the principle of government regulations to be indisputable; once human intelligence established sanitary codes in Britain, there was a marked decrease in this class of preventable disease, and quality of life was significantly improved for all citizens. The economists of yesterday came to recognise that competition in relation to water and sanitation systems led to economic waste, bad product, and civic and social damage.

Britain established that such public good was far more economical for preventing disease, than the competing paradigm of curative health care and health insurance. In addition to the “vast economies” of which preventative sanitary services gave assurance, “for the benefit of the civil population”, the preservation of a steadily growing pool of healthy and skilled workers became the instrument for applying the fruits of science and technology. This generated a continuous stream of productive innovations. By 1887, health insurance premiums - for sickness, loss of work and death - were a third of those in countries that chose to remain ignorant of the principle of preventative legislation. It is clear that all of the achievements combined to increase the competitiveness of industries, thus facilitating increased wages for workers and stimulating the consumption of goods and services.

At the *Jubilee Of Sanitary Science* in 1887, Sir Chadwick was able to boast that the common death-rate had been reduced more or less by 60 %; the sound bite was “so much has been attempted and so much achieved on the special subject of the health of nations”. Based on his remarks and the reported annual death toll in Britain around the 1850s – it remains to be established that these systems of public water quality insurance may have served as a means of guaranteeing the continuity of as many as 180,000 lives each year in Britain. The overall impact on illness and death rates, along with the myriad of monetary savings of public health-related costs at the household level, had then a remarkable transformative effect on living standards of British society. It was confirmed that “it was not until the 19<sup>th</sup> Century dawned that it was seen how much could be done by legislation and voluntary effort to improve the health and to ameliorate the social and moral condition of the people”. Could there be any argument for there being no need for such strict water quality standards in Australia today, or against now assigning responsibilities to properly maintain this core measure of protection?

### *The health of the Australian population should be protected*

Today, waterborne disease outbreaks continue to occur globally. The source of most pathogens in fouled water is human faeces. Populations are exposed to all of the invisible pathogens through various transmission routes; the key risk factors are outside of the control of households. For example, the failure of a water supply delivery system in Milwaukee, USA in 1994 caused over 100 reported deaths. There were estimates of around 403,000 persons ill with cryptosporidiosis, for an average of more than 10 days; approximately 44,000 persons visited health care facilities, and an estimated 4,400 were hospitalised. It is yet to be confirmed that the event only cost the community US\$55-million. The values of the upstream, downstream and global costs were unreported.

The public health challenges associated with water and sanitation systems are also expanding. For example, bacteria are susceptible to infection and co-infection by bacterial viruses (known as bacteriophages), possibly resulting in their becoming “more pathogenic and antimicrobial drug resistant”. Such bacteriophages can be waterborne; as fresh water can be contaminated by waste in various ways, from deficient and broken sewerage pipes to “sewage overflows, polluted storm water runoff, and agricultural runoff”. Using such reported Australian “multipliers” of disease, it is estimated that each year in New South Wales (NSW) there could be as many as 17,948 cases of salmonellosis, 71,870 cases of campylobacteriosis and 568 cases of Shiga toxin-producing *Escherichia coli* cases”. The majority of such cases were not however detected by the NSW community disease incidence surveillance system in 2007 (2,564, zero, and 71 cases notified, respectively); though it is noted that 10,488 cases of gastroenteritis (in institutions) were notified to authorities.

Canadian research suggests that “between 14 % and 34 % of gastrointestinal disease” could be transmitted through drinking water treated to conventional standards. The findings suggest that such endemic waterborne disease in NSW could result in up to 6,102 cases of salmonellosis, 24,435 cases of campylobacter, and 24 cases of shigellosis. However standard bacteriophage typing cannot be done in NSW, necessitating referral interstate, which adds costs and time “delays of 2-4 weeks before results are available”. Is it possible that many such hypothesized cases in NSW are being reported as mere

gastroenteritis, potentially an additional 35,659 cases of such water, sanitation and hygiene-related disease, which might be distorting prioritisation of government spending on public health? NSW seems to be beset with such disease outbreaks, including: *Clostridium perfringens* (2008), cryptosporidiosis (since 1998), gastroenteritis (since 2005), giardia (since 1998), *Salmonella* (since 1995) and Shigellosis or *E.coli* O157:H7 (since 2000) – all impacting adversely on vulnerable persons, and not strictly limited to those immune-compromised, infant and elderly populations. The former Minister for Health of NSW recently warned that water supplies that were not properly monitored and maintained could carry and transmit waterborne diseases.

Recent advances by the scientific community in the United States also confirm that as detection technology improves trace contaminants (e.g. steroid hormones, pharmaceuticals) are being found in wastewater effluent. It is being found that diseases from chemical pollutants and disinfection by-products (DBPs) in supply and distribution systems can also be transmitted, through a variety of exposure routes. A new variant of “prion disease” that may place 42 % of the population *at risk* of infection has also recently been identified by British researchers. All such considerations have important implications, from policy planning and resource allocation, to fresh water and public health management. For example, ill health caused by waterborne disease, such as parasitic worms, can impact IQ scores of children in school.

The *Association of Environmental Engineering Professors and Water Environment Federation Scientists* of the United States confirm that “process engineering alone cannot maintain water quality”, adding “the by-products of water treatment can be just as harmful as the pathogens they were meant to destroy”. For example, despite regulation of n-Nitrosodimethylamine (NDMS), “it can be found in higher levels in some areas because reverse osmosis membranes do not remove it”. In fact the range and concentration of toxic chemicals and other emerging contaminants in wastewaters can be highly variable, which greatly increases the complexity of protecting water quality and human health. The reported health effects are serious and range from endocrine disease, to reproductive problems, to increased bladder cancer in men. Should Australia be increasing water quality standards?

These diseases of modern civilization are much harder to detect. Health outcomes associated with infections, colonisations and bioaccumulation of toxins in human beings may only develop over much longer periods of time. The full impact on future generations is unknown; there is also no information on what emerging contaminants - from new materials to new methods of production – might get placed down the drain in the future, thus ending up automatically in our rivers and public water supplies. **A precautionary approach to the ‘public protection of health’, as an accepted principle of international law, should be prudent and responsible “to prevent the causing of significant harm”.** Australian citizens rely on governments for sound regulation of water quality and public health, to keep our hospitals empty and to protect our quality of life.

The life expectancy of citizens is the strongest indicator by which to measure the efficacy of all public institutions devoted to serving the public interest. It is also the best testimony to success. There is a failure of governance when people’s health is put *at risk*. For example, a recent foodborne disease outbreak in the United States was linked to poor quality irrigation water. As a result of human consumption of contaminated vegetables, it was reported that an outbreak of *E. coli* O157:H7 infections had resulted 199 illnesses and 3 confirmed deaths. This investigation reported approximately 51 % of victims were hospitalized and 16 % developed kidney failure. Around 71 % of victims were reported to be females, and 11 % were children under 5 years old. This event - reported to be one of 400 since 1990 - affected 28 US States, Mexico and Canada, with farmers facing initial losses of US\$76-million. Again, the values of the national and global costs were not reported. It should also be noted that at the other end of the stream is the growth in *dead sea zones*, and coral reefs; the associated contamination of ocean food stocks that global persons consume may ultimately be proven as the supreme loss of all present and future generations.



As we are learning too slowly with complex diseases, the efficacy of pharmaceuticals to ward off or cure infections – if they are available and affordable - does not last indefinitely. In fact, residual pharmaceuticals in wastewater effluent may be linked to the unfortunate and advanced development of drug resistant strains of infectious disease. Water, sanitation and hygiene-related disease is continuing to challenge the survival and well-being of all people in all nations. For example, the outbreak of cholera in Zimbabwe currently might be seen as a more timely reminder of the severity and relentlessness of the spread of water and sanitation-related disease across national borders. In the past 4 months there have been 29,131 suspected cases and 1,564 deaths - just on one day, there were an additional 1,604 cases and 53 deaths. South Africa is now reporting 1,279 cases and 12 deaths. The value of such human and economic losses cannot even begin to be predicted; but they can be prevented. The chief object of governments as regard water quality should be the secured protection of the public.

Australia must stay ahead of this fresh water challenge; such loss of individual, family and community wealth and independence is unnecessary. The increasing need to advance public health and safety is clear. The political and legal system should secure advanced fresh water and public health protections. Access to *adequate* water and sanitation is critical for promoting good health and well being in each of our towns and cities, and by extension, that of our neighbours. In this globalising world, which offers much additional benefit for all persons, societies need to be extremely careful; such disease is indestructible, opportunistic and on the move, so there is no room for “indolence, incapacity or waywardness”. It should be realised that no part of any crowded global district can be neglected, without diminishing the protection of all.

Under public international law (international law), it is a duty to “protect ecological flows” of fresh water and “prevent, eliminate, reduce and control pollution”. This is now a growing imperative to “adequately protect” and effectively preserve societal gains, for global health. All communities should respond more proactively to the indispensable need of such vulnerable persons, from the local to the international levels. Effective protection in this area of public health is in the enlightened self interest of all. These are ‘real’ costs, adverse in terms of household productivity and national competitiveness; and for the international community as a whole, threats to global stability, security, development and peace, each impacting on the quality of life of all persons, today.

The notion of the primary and natural right of human beings to good government centres on “the establishment and maintenance of a rule of order and justice for securing the general welfare”. This has been described as “the only security for the enjoyment of any right whatsoever”. It is “a right to have happiness consulted, and rights protected, by authorities entrusted with power, in the same degree with those of every other person in the community”.

Sustainable development should be ethically driven; there appear to be global principles of right and wrong that societies should adhere to. As actions have a certain finality, citizens do also need to be involved in decisions that affect their immediate health and well-being. Such decisions need to be respectful of the rights of all persons.

Sanitation is an essential function of the State. The United Nations Human Rights Commission has made it quite clear that access to *adequate* sanitation “constitutes one of the principal mechanisms for protecting the quality of drinking water”. The downgrade of water quality standards in Australia and the intended processing of sewage and industrial wastewater for personal consumption and hygiene needs - by placing *at risk* access to good quality water that has been at the *core* of our public health protection - may be a signal that participatory democracy, as the cornerstone for public decision-making, may be failing. Interestingly, the NSW Government claim Australia was regarded as a “leader in the development of political democracy” in the late 19<sup>th</sup> Century.

The *Institution of Engineers* of Australia state that good governance requires that governments initiate and implement arrangements within their jurisdictions to optimise economic and social conditions for their citizens. Yet the wishes and the interests of the people - as regards pure, fresh water - do not appear to have

been effectively consulted in the decision to remove such secured protection attached to drinking water quality. Such protection is vital if these essential systems of public insurance are to support any object of increased household productivity and public profit. It is also unclear who will be responsible for any increased costs of water treatment, curative health care services, health insurance premiums, damage to property, and such associated legal costs (e.g. compensation of public and private interests for economic loss resulting from poor water quality associated with inadequate construction, operations, maintenance of water infrastructure systems, lack of timely upgrading of such systems to meet such established and emerging public health challenges, etc.). Does public administration and good governance in public health need to be improved?

Constitutions reflect the history and aspiration of a people. Political democracies have responsibilities to represent the interests of both present and future generations. Could commissioned technocrats and executive government advisors have inadvertently taken the ideals and contemporary values of the Australian people or the international community too lightly? There are global trends here that are leading us along this path of economic efficiency, about which we may not have thought through the full implications, including whether they are firmly grounded on “the bedrock of social and economic rights”. Is Australia - as an international person - being a prudent and responsible global producer; assuring that any such “inevitable consequences” will “fall lightly”, and not on the people? Rights and obligations for water quality should be securely protected in the interest of all. Should it be checked whether Australian powers over fresh water and public health, to conserve the health of our citizens, are appropriately delegated “in line with the ‘real’ concerns and needs of citizens” and the international community?

### *Fresh water is a human right*

Water is the essence of life. Along with the air that we breathe, *fresh water* is the most universally useful substance on the planet, and, as such, it should be considered a public good. As a public good, it is a vital necessity for human health and survival, and the sustainability of societies. Good quality water, like freedom, is an intermediary end – a condition, and not an ultimate goal.

This human right to water is based on fundamental existence need. Due to its indispensable nature, in guaranteeing longer and healthier lives, there is a legal entitlement to “sufficient, safe, acceptable, physically accessible and affordable water for personal and domestic uses”. The international community has committed to protecting this right through international law.

Nation-States have obligations and duties under international law to respect, protect and fulfil these human rights, in the interest of both present and future generations. These internationally guaranteed standards are interdependent, indivisible and interrelated. *General Comment No. 15 (2002)* of the United Nations Committee on Economic, Social and Cultural Rights confirms the human right to water. It clarifies the substantive issues arising from the implementation of the *International Covenant on Economic, Social and Cultural Rights (1966)*, and outlines the obligations in relation to this right.

The right to water contains freedoms, and entitlements, not limited to systems of health protection providing equality of opportunity, or to the prevention of disease. The General Comment states that the elements of the right “must be *adequate* for human dignity, life and health”. Adequacy should not be interpreted narrowly, “by mere reference to volumetric quantities and technologies”. It is also made clear that the human right to water must “be provided to all citizens without any discrimination”.

A State party is required to “refrain from interfering directly or indirectly with (individuals’) enjoyment of the right”. If deliberate retrogressive measures are taken, then - there is an obligation on the State party - to prove that they have been introduced only “after the most careful consideration of all alternatives”. In this regard, each nation is obliged to “use the maximum of its available resources” in securing and protecting the right to water. The Committee add that infringement of one right often impairs other human rights, such

as the right to an *adequate* standard of living, the right to enjoyment of the highest attainable standard of physical and mental health, the right to education, the right to freedom of speech, the right to work, and so on...

Nations are also obliged “to ensure sufficient recognition of the right to water within (their) national political and legal systems, preferably by way of legislative implementation”. The General Comment forewarns that violations of the right to water include the adoption of legislation and policies that are “manifestly incompatible with pre-existing domestic or international legal obligations in relation to the right to water”. For example, given full support and commitment to global free trade, governments must “ensure that agreements concerning trade liberalisation do not curtail or inhibit their capacity” to protect the people’s right to be guaranteed access to pure and fresh water.

When water facilities and services are operated and/or controlled by the private sector, there are also obligations to fulfil. For example, the affordability of water, and water services, must not be compromised. To prevent abuses, “an effective regulatory system must be established”, and this must include “genuine public participation”.

State parties and other entities further need to ensure that proposed strategies and plans “do not interfere with access to adequate water”, and that “appropriate institutional arrangements” are established. Of increasing importance is that “individuals and groups need to be given full and equal access to information concerning water, water services and the environment, including that held by third parties”; especially in light of new uncertainties, fuelled by today’s global economic competition. For example, by now restricting access to such information, the recent and hasty advance of counter-terrorism legislation and policies in many inclusive democracies may add to this challenge. Such decisions may also remove such public insurance matters of water quality and human health to the domain of administrative law - which may risk “severing links of duty and of kindness”, or preventing such issues from being duly considered by a properly qualified judiciary. Has international civil society given any thought to this matter, and the associated potential to cause economic loss and undermine contract law, the principle of equity, and representative and inclusive democracy under the rule of law?

International nongovernmental organisations such as *Transparency International* confirm the increasing challenge of good governance in the water sector globally. It is certain then that the burning problem of our age and time – poverty reduction and the right to water – is understood properly by only by a microscopic minority. Nevertheless, the foundations for world peace inevitably being laid down now, it is essential that governments advancing innovative methods of constitutional control not forget this basic existence need of the people.

As an upstanding member of the international community, the Commonwealth Government should give due consideration to Australia’s obligations *erga omnes*. International legal personalities must take into account the interests of the whole international community - and of international public order. Currently around half of humanity lacks access to adequate water and sanitation. Over 5,000 children die in the developing world each day from the risk of infection of water and sanitation-related disease; in these nations the hospitals are more or less than 50 % full with such cases at any given time. Could a process or a precedent that promoted the forced or informed reuse of sewage and industrial wastewater - as a substitute for good quality water, especially in the *International Year of Sanitation* - be in the interest of global health, sustainable development, or world peace and security? To achieve international objectives one could imagine a greater need - to build a sense of common cause to decrease the spread of preventable disease for the 'global public good', and through such great equaliser of opportunity as sanitation, open doors for business.

*Fresh perspective for a new paradigm on water quality and human health*

Good government is an art in the service of the common good. **There is general agreement with the concept of beneficially reusing sewage and other sources of wastewater for “acceptable” uses, but substitution for potable use should be a “last resort” method of obtaining water in communities where no other method is feasible, suitable and realistic.** The intent of the 1850 *Metropolitan Sanitary Association* of London should be remembered; they might be most apprehensive of the change in Australia today, which seems to have entrusted “the management of this most important public service” to “a body subject to elections at short periods, and therefore to frequent changes”.

The protection and preservation of a well-functioning society demands a politically alert and mobilized citizenry. Technological failure and/or human error occur routinely, on every imaginable scale, and at each level of governance; some incidents are not even reported, due to the political consequences to leading parties. For example, a computer failure at the Queanbeyan, NSW wastewater treatment plant in November 2007 resulted in over 1.5-million litres of raw sewage being discharged over the border into Lake Burley Griffin in Canberra. This occurred during a government *push* to augment fresh water supplies for the capital city of Australia through the radical introduction of processed sewage and industrial wastewater into relatively pristine public water supply storages. There were 5 days before a pedestrian, passing by the plant, notified the authorities of the spill. With unsecured protection, the amount of untreated sewage and industrial wastewater released could have been much higher (e.g. 55-million litres).

There appear to have been numerous other failures at this plant, also resulting in the release of untreated sewage; the most recent being September 2008. This sewage treatment plant was only upgraded in the mid-1980s; the primary barrier of sanitary protection is already broken, as seems to be the case with the unemployed secondary barriers of sanitary protection. While the cost of failing to treat this sewage may have saved the local Canberra community, it is not clear that this news was reported to publics in other parts of Australia - that at the time were considering the safety of such recycled sewage for augmenting fresh water supplies. The values of the other local, upstream, downstream and global costs of this incident are unpredictable; it was also unreported whether any remedial measure would be taken.

Many of Australia’s other water and sanitation systems are outdated and rely on old pipes and pumps, and most of these infrastructures are today maintained poorly in an environment of public cost reductions; there are few votes in increasing direct taxation, for spending on new or rehabilitated water and sanitation systems configured for sustainable development, today or tomorrow. Yet hard decisions must be taken, not limited to the Australian economic system. For example, it is necessary to “adequately protect” Australia’s 10-million workers who are relied on to produce around \$3.5-billion of goods and services each day, as well as those rights and interests of international consumers who buy such products. In this regard the recent disease outbreaks transmitted through the Sydney, NSW water supply (i.e. cryptosporidiosis, giardia, etc.) should serve as advanced warning; those persons with influence or power should ensure that fresh water and public health is secured and protected, in line with global principles, such as the rule of law and preventative legislation. To ensure that the people of NSW, Australia and international consumers are “adequately protected” against such serious illness, it might be prudent and responsible to establish whether the spate of local disease outbreaks is linked to such public health decisions taken in the late 1980s.

The United Nation’s define water governance as “the capability of a social system to mobilise energies, in a coherent manner, for the sustainable development of water”. They state “governance implies the capacity to both generate and implement appropriate policies. These policies are the result of having established consensus, having devised coherent management systems (regimes based on institutions, laws, cultural factors, knowledge and practices), as well as adequate administration of the system (based on social participation and acceptance, and capacity building)”.

In order to be effective, such governance must be “transparent, open, accountable, participatory, communicative, incentive-based, sustainable, equitable, coherent, efficient, integrative and ethical”. Legal obligations should be laid on all governments and service delivery agencies responsible for ensuring water quality and human health protection, to meet the ‘real’ concerns and needs of all persons in “adequately protecting” against such associated human and economic losses. This is critical for ensuring complex water safety controls are effectively implemented, through greater public consciousness on behalf of all persons. Universal standards of water quality are in fact crucial for ensuring “justice, equity, good neighbourliness, and the prohibition of the abuse of rights” in our communities.

Sound public health is a national objective, and not a calculated risk to be taken by government commissioned technocrats and political advisors; such individuals are not voted into office and may not be easily held to account by any free Parliament. Under market-oriented governance, with water regulated in multiple jurisdictions, it is to be expected that governments will reduce service delivery and safety standards - in order to reduce public costs and to maximize economic return on water usage. Pretty soon, without a good publicly educated citizenry, a town will begin to ignore the needs of the politically powerless - in order to gain more benefit from the use of water. With water quality and human health there are ‘real’ questions of who benefits and who pays, if actions are consistent with the public interest and “the best utilization of water”.

The United Nations add that, at the very minimum, “those in charge of water management and service delivery must continuously analyse the impact of existing and proposed macroeconomic policies on the development of the water sector, and maintain a fluid, frank and active dialogue with those responsible for economic and social policies”. It is in this light that wholly independent regulatory bodies have become quite useful in democratic governance. Vibert states that in modern nations such regulatory bodies “now take many of the detailed policy decisions that affect people’s lives, untangle key conflicts of interest for society, resolve disputes over the allocation of resources and even make ethical judgements in some of the most sensitive areas”. He adds such unelected bodies can be seen as “composing a new branch of government” and “forming the basis of a new separation of powers”; they “derive their legitimacy from, and are accountable to, the elected bodies of democracies.

The basis of such legitimacy stems from their capability to rigorously approach facts, seek information, weigh the state of empirical information, current state of technology and research and draw evidence-based conclusions for their regulatory functions - in an impartial way through a widely accepted and transparent process. Vibert suggests such regulatory bodies are particularly useful in “separating facts from spin, and navigating through the complexities of the related empirical background”. In this light, systems of democratic governance may become “less susceptible to populism, and to arbitrary and to indiscriminate exercises of power”.

With governance of fresh water and public health there is a critical need for reflection on the two sets of judgment, knowledge-based judgment (that is the remit of regulators) and political judgment (the area of policy) and the associated trade-offs. For example, the United Nations suggests that “planning involves striking a balance between the security of the water rights of economic agents (so vital for promoting investment) and the *ex-ante*, and possibly, *ex-post*, controls of private activity”. There is an implied need “to integrate quality and quantity in water management, as well as surface water and groundwater, plus water supply and demand”.

It seems timely and reasonable to now consider in Australia whether such an independent regulatory agency at the federal level, with integrated powers, covering both quality and economic regulation, could be useful in offering political leadership in this domain: as a boundary watcher (to monitor the boundary between states and markets), and umpire (to ensure the equitable treatment of all stakeholders). It appears that this would be in the interest of both proponents of equity and human rights and economic efficiency, and hence, justifiable in consolidating all such regulation of water across State and Territory governments.

The Australian system is reported to traditionally support “interstate rivalries in water development and claims” and maintains multiple “state-specific systems for water allocation, use and management” - which may not be efficient, effective or sustainable - particularly under the advancing conditions of local and regional climate changes. Such an object could greatly reduce the ‘real’ risks to water quality and human health, from parochial influence and/or across State and Territory boundaries, and by reducing some unnecessary government expenditure, save publics considerable sums of monies.

There appear to be good reasons for this area of public policy to be entrusted to an independent regulatory body; including the evolution of a more robust democratic system of governance in Australia that is less vulnerable to older styles of political control. Such has historically tended to allocate fresh water as a political resource, resulting in unmanageable pollution, over-development of river basins contributing to severe water stress, and widespread degradation of the environment; thus placing the right of Australians to be guaranteed access to pure, fresh water *at great risk* of significant harm. Could such substantive ambition now elevate this branch of administration, above such influences as those indicated previously; and in the words of Viber - “obtain with unity of management, competent and efficient direction and proper responsibility to the public at large”? Viber confirms that “resentment of more questioning by publics is not the answer”. The benefit of “stricter responsibility for the due performance of one business” seems to compare positively with such a role for the general government, “for what can only after all be one of its minor occupations”.

The Australian people are fortunate that there is still a right to be guaranteed access to pure and fresh water for their health and well-being today, which is more or less half the battle in the pursuit for happiness and prosperity. For the human right to water to be wisely and jealously preserved then, it may be that strong and independent regulation of water - more effectually under the influence of enlightened public opinion - should be required. After all there is an increasing need for due consideration, in our increasingly interconnected world, for the prevention of such disease.

### **A governance challenge for leading engineers and public health professionals**

In some sense many modern nations are living off the endowment of our past generations, oblivious to the costs of failing to properly maintain and upgrade such essential water and sanitation infrastructure and service delivery systems for the challenges ahead. Democracy is only concerned with whom is vested with the short term ruling power. Government budgets are continually shifted, to align more with such political priorities required of staying in power; many of the human factors that need to be duly considered in the fresh water supply chain have been established in fact as related directly to water quality governance.

Such preferences can seriously interfere with essential public health systems, causing “significant harm” to what - hard lessons learned suggest - must be systems of secured protection of service delivery. Taking such decisions may be made all the easier in political and legal systems where there is no “question of compensation” to public and private interests. For example, citizens not protected from the actions of service delivery agencies by such legally enforceable water quality standards, or service providing companies not protected from such government contests for service delivery agency operations, maintenance and replacements budgets. The charitable race for donations to fund election campaigns is always hastening.

A system of checks and balances should at the minimum provide a way of making the world safe for democratic governance. More care and greater thought may now be needed in Australia, as the times permit, so that a “great public injury” is not inflicted upon our own backbone. Serving processed sewage and industrial wastewater for human consumption and hygiene is not safe, even if the technology is available; it having in some sense been proven, in a laboratory under strictly controlled conditions. Such decisions may seriously undervalue the public good benefit of pure, fresh water in its personal and domestic applications, and thus the human currencies of our Constitution. It has today become critical that

we “not cause 'substantial damage' to the environment or to the natural condition of (our Australian) waters”, particularly in light of the advance of local and regional climate changes.

Yet steps taken by the Commonwealth Government have also recently *commodified* water quality, implemented under the guise of market-based fresh water trading. Publics should be prudent and responsible in taking such decisions over “whether to use administrative mechanisms or water markets to achieve water reallocation”. Water trading appears to be an unproven precedent – particularly in terms of “maintaining proper standards” of water quality – that will spend \$3-billion dollars of public monies to buy back what is perceived as already publicly owned fresh water, from private interests; after creating the potential for the preferential use of such fresh water by the wealthiest of bidders.

The United Nations state that “in virtually all jurisdictions, the allocation and retention of water rights are contingent upon putting them to a socially recognised *beneficial use*”, typically, “consistent with the public interest”. For example, “a typical formulation of the rule of *beneficial use*” - as applied in the United States - is that “*beneficial use* is the basis, measure and limit of all rights to the use of water, consistent with the public interest in the best utilisation of water”. The United Nations confirm that such rights to the “reasonable use of waters of rivers” are “always limited and never absolute”, so it is usually possible to impose new conditions after they have been granted.

Conditions attached to water rights - if not already integrated into basic rules of law - might include substantive requirements (such as “no harm to third parties, environmental protection, reasonable efficiency, or payment of common control costs”). To protect the general welfare in virtually all countries of the world, under water law, such “water rights risk forfeiture if not used, or if not used according to the terms of a licence or permit”. Should it be checked whether the decision to shift to market-oriented governance in Australia was necessary or justified?

In light of such unreported and evolving research on “reasonable use” of water quality and conservation of the health of citizens, it appears that water trading could run counter to the public good. There are many questions that need to be duly considered, including the national interest and safety:

- Has there been effective consultation with all stakeholders?
- Is the economic and cultural context appropriate?
- Are stream conditions maintained to ensure optimal water quality and ecosystem integrity?
- Are universal standards for water quality and environmental integrity in place and will such be enforced appropriately?
- Is planning going to be integrated, or to what extent?
- How much will water for meeting basic human needs and for ensuring the integrity of human settlements now cost Australian households?
- Will this rate be the same across Australia?
- Are there regulations to protect against impacts to third parties and the environment?
- Who will pay for any additional pollution and any increased cost of such water treatment?...
- Has water demand management achieved a benefit for our towns and cities?
- Is there a risk that the institutional framework that has been established will prove to be too fragmented to effectively “correct the distortions that the nature of fresh water inevitably generates”, and therefore will be “insufficiently mature” or result in inefficiency?
- Will water reallocations affect other water users of water quality and be in the public interest?
- Will water be put to a beneficial use, and continue to be used beneficially after reallocation?

- Will there be limits to water transferred out of drainage sub-basins, and who will define and enforce these?
- Will there be sound water management based on international best practice?
- Will water use and management be optimal, in terms of water, public health and climate protection?
- Will any “increasingly drastic and ruthless competition between water users” be managed in the spirit of cooperation?
- Will there be adequate resources to ensure effectiveness, or sufficient time for a divided administrative approach that implements and incrementally improves such systems?
- Will functional planning be rigid or lead to wasted resources?
- Will there be a guarantee of success?
- Will the proceeds of any separation of water from a property be first applied to the environmental restoration of any damage at that site and public locale?
- Will all the underlying equities and interests of the area of origin be protected?
- Will compliance be based on voluntary adoption and honour, or creative interest in protection and prevention?
- Is the approach to water trading, i.e. steps taken to date, fully grounded in domestic law and sources of international law?...

Water trading could seriously impact on the quality of life of all Australians. For example, it appears most certain that fresh water, public health and climate protection are closely related. Is there any additional risk to the public that “relevant consideration” has neglected, in lieu of the need for due consideration? Could such positive and fruitful initial steps away from older styles of political control of fresh water, towards new methods of constitutional control, now benefit from further reformulation? If so, should the first step be the introduction of adequate and universal water quality standards, to deconstruct such perceived systematic disadvantages, and in such sense, ensure such values as “justice, equity, good neighbourliness, and the prohibition of the abuse of rights” are applied to fact?

The recent and innovative approach of the Commonwealth Government to water quality and human health could in some sense be likened to *privatisation* of the public guarantee of access to pure and fresh water. In light of the more unpredictable costs, could a water market-based approach be more or less likely to achieve “sustainability or the minimisation of environmental harm”? The public interest and public health benefits of shifting to water trading in Australia should be reconfirmed, particularly given the unique features and special characteristics of Australia’s fresh water.

The possibility of “monopolization of access” to water by both the domestic and international political and economic systems may encourage “hoarding and speculation”, and/or “create barriers to entry for competitors in various markets”. This could promote a race to the bottom, in terms of fresh water supply and effective sanitation, with the unpredictable costs translated locally, upstream, downstream, nationally and globally? Conversely, there seems to be a need for incentives for the private sector to invest “in the development and conservation of water” – for “stability and certainty”.

Mill conceived over 150 years ago that “the possession of such monopoly over water by individuals constituted not freedom, but slavery; it delivered over the public to the mercy of those individuals”. It was established then that “directors of joint stock companies did not act for their own pecuniary interests, but for those of their constituents”. His overall life experience of the private sector at that time was that “representative management” was “quite as liable to be corrupt or negligent”; the serious failure to take due care over the quality of water delivered to individuals and families in London is one case established in law. In this case, the process of discovery of such fact - to establish an association with such preventable



disease and the loss of life of hundreds of thousands of human beings - actually went on for over 20 years; nevertheless, through the persistence of civil society and good government around 2,500 years of sanitary decline by civilisation was reversed.

In Australia today it could be that *commodification* of public fresh water might tend more to promote a manmade drought, exacerbate local and regional climate changes and such effects of global warming, and/or restrain essential water efficiency and conservation measures - for economic efficiency and the interest of profit maximisation. Such may financially benefit only the few; and not on the scale by which such could translate serious costs to the public, thus undermining equity and the rights of Australian citizens. Can Australia afford for there to be any such indifference over water quality and human health?

The increasing problem is that any further advance in the deterioration of water quality and environmental integrity in Australia now could unduly increase the cost of delivering clean and pure water to the public, and seriously limit the quantity and quality of food produced locally. Any perceived further weakening of the “governments ability to carry out the nation’s business” could further complicate the necessary regulation of plagues and pandemics, and social and economic development more generally. This may contribute to the advancing of desertification throughout Australia’s productive lands.

Such potential rivalry and exclusion – without “an enabling environment and an institutional structure that allows all stakeholders to work together for effective water management” - appears to be fraught with additional and unnecessary financial liability for Australians. Should potential hoarders and speculators be rewarded annually, simply for having negotiated scripts 100 years ago - from governments desperate for money for spending - for fresh water that may only ever come along each 10,000 years? As Mill made clear, in our Colonial times, the mischief of “jobbing” by ministers and political parties – i.e. jobs “for personal connexions and Parliamentary adherents” – greatly contributed to “indifference and inactivity” in that era. In the end, this may only have “helped to give undue influence in the legislature”. Should modern reform of our liberal democratic institutions now ensure that the public interest of pure and clean water is more securely protected; thus repositioning Australia once again as a global leader in the race to develop political democracy?

The only security for the efficient, effective and sustainable performance of such water trading is public opinion. Such full information has not been made publicly available in the past through “inefficient government institutions”, and it may now be shrouded from proper public scrutiny by counter-terrorism laws. Once again the Australian public may not be enlightened by any free Press as to the increased risk and threat, or even be half aware of the dangers. As in the case of the removal of necessary and justified water quality protections, or in the willingness of some Members of Parliament to be seen drinking recycled sewage, the public have no effective means of objecting to a representative government. Vibert claims that under conditions of modern democracy, such independent regulatory bodies “make it much more difficult for elected politicians to play fast and loose with the facts or to claim privileged access to knowledge”. To advance household productivity and national competitiveness today, do we need some public good to develop a better-informed citizenry, apprised of the challenges to rights, equity and water quality?

A check could operate much more effectually on a strong and independent regulatory body that could “assess the facts and apply values to the evidence” for water quality and environmental integrity across Australia as a whole. In fact the establishment of such unelected bodies is confirmed as a major new dimension to decision making in leading democracies. Insofar as the \$3-billion market-oriented governance plan for water trading may only increase Australia’s agricultural export income by as much as “\$50-million per annum” - which may now be uncertain in light of the evolving global financial market crisis - such proposition for serious innovation that “provides people with actual control over water and qualifies state sovereignty” seems feasible, suitable and prudent.

The United Nations maintain the “core element of governance is the capacity of constructing institutional arrangements in harmony with the nature of the abilities, limitations, and expectations of the system or area under consideration”. Such an *entrepreneurial* result in Australia might then be seen as a sign of the weakness of civil society in “water, water services and the environment”, or of the “weak regulatory role” of a State that is “not adapting to the nature of the thing that is being regulated”. Markets do not function properly without “free flows of information, competition, protection of property rights, and control of externalities”. For example, Australia’s small rural communities now seem to need “adequate protection” against fresh water scarcity, serious disease and environmental change - and all the added risk of social and economic vulnerability.

To be viable and provide for the nation’s food economy, our small farmers need access to good quality water; such water allocations removed from rural land could now threaten whole property markets. The potential consequences of water trading could “interfere unreasonably” with water quality, human health and regional economic growth, and hence “inflict unreasonable injury” on other rural markets. Such a development path - which interfaces with such right of Australians to be guaranteed access to pure, fresh water - now shows some signs of generating tensions in the social fabric of our Australian community; on the contrary, this was built on highly spirited cooperation. Is there a misconception that no-one owns Australia’s public waters, or that they may be “reasonably” bartered away by such beneficiaries of water allocations, to the detriment of Australia’s working classes?

The race to water trading may prove to be short-sighted, particularly in terms of water quality. It appears to construct another systematic disadvantage, which may contribute to the undermining of the health and well-being of certain persons, at the same time creating additional vulnerabilities in Australia. Has the rule on fresh water requiring the "prevention of various kinds of harm" - consistent with “adequate protection” of water quality and human health - been subordinated to the rule of "equitable use" and limited to the domain of our central governments?

If such was a Constitutional issue needing an amendment – that is, if water trading was related to “any law or regulation of trade or commerce” in Australia’s framework of democratic rule – then citizens might have expected to have had a choice in the matter. Are elements of the right of Australians to fresh water *adequate* for human dignity, life and health and protected? It might be prudent and responsible to establish why water restrictions are reported to be costing Australia’s towns and cities around “\$6-billion per year”, and “damaging the health and social well-being of the nation”.

Reasonable and beneficial use of water in Australia is arguably defined in terms of a fair and just measure of equality. Such equality in access to *adequate* water and sanitation though is especially important for women, as any such limited access “tends to disproportionately affect their health, physical and psychological integrity, privacy and access to education”. Precedence should be given to the provision of fresh water for basic existence needs of all persons in Australia, to prevent any such systemic disadvantage that might undermine the health, well-being and quality of life of all.

The separation of conservation management from holistic water and sanitation systems in our cities, and the incidental taxation of urban residents - through large remittances to governments made feasible by possibly over-charging water enterprises - may now add injury to both public and private interests. There should be no budget contests that jeopardises the quality of water delivered to any individuals, families and communities, and hence the health and well-being of all Australian citizens. In association with the downgrading of drinking water quality standards to mere, unenforceable guidelines, all of the added risk at the level of service delivery and safety may destroy our local community values. In fact the widespread lack of access to *adequate* water and sanitation globally clarifies the need for due consideration and care before taking any step at any level that may interfere with an integral water and sanitation system. It should not be overlooked by the public that our essential public health protections did not just appear overnight.

Mainstream Australian public health development took place over many generations, entailing both untold volunteer efforts and great public investments at the local level. The object was the achievement of a good life free of disease. This system should now be secured for all Australians, and protected, including from the potential excesses and abuses of water enterprises and market-oriented governance. Sir Chadwick – an actuary who dealt with the financial impact of risk and uncertainty for more than 50 years – contended that “unguarded insurance” was “the source of murder, of fire, and of shipwreck”. There is a need for a healthy and enlightened public opinion on fresh water in Australia, to now secure an effective check on our system of democratic governance.

A radical departure from the Australian principle of fresh water supply now may widen and deepen existing inequalities in our society, and not only between the rights of mainstream and indigenous Australians. In addition to the already widening gap between the wealthy and the poor, the changes may inadvertently increase inequities between: the healthy and the immuno-compromised; those living in urban and rural communities; those subsisting in upstream and downstream cities and towns, and those who are white and blue collar workers. Preventing this sort of outcome seems to have been an object of the Australian Constitution. In addition to placing public health, food security and regional economic development outcomes *at high risk* of significant harm, such steps may also delay Australia’s inevitable and necessary strategic response to expand our economic system in line with sustainable development.

At a time when the problem of water management, public health and climate protection is increasing in priority globally, the lack of information on Australian water and water systems - made available in an appropriate format for the public - contributes to the challenge. The recent curtailment of political and civil rights and freedoms adds to the dilemma. It may not be responsible for governments to hide information on water quality from the public and prevent its discussion by professionals. For example, this might increase the potential power of a government to coerce and compel opposition parties, who may possess superior knowledge of alternative approaches to sound water governance, supported by civil society groups who use non-violent means to articulate their view points. Such curtailment of dissent might not be in the interest of competitive politics, or indeed that of the public.

The advance of legislation that limits access to information on fresh water undermines certain time-tested principles, and for those societies without any secured protection of such rights and freedoms, may in some obscure sense actually take them back 794 years in terms of ‘real’ progress. It is certain that it is understood properly “by only a microscopic minority” that “the best quality water accessible cannot be procured by an individual, except at an extravagant cost, unless with the cooperation of many others”. **Rights and interests of citizens to fresh water should be secured and protected in legislation, such as a bill of rights, or in a declaration at the national level of access to pure and clean water as a public good to which all citizens should have equal access.**

### *Fresh water is in the ‘greater’ public interest*

There is a need to husband and manage Australian water more prudently than we currently seem to be doing. A first step might be to re-institute a system of secured protection - through public policy - for essential human health and survival needs, and for vital societal necessities. Fresh water is both the common and the public wealth of all Australians; there should be equity in water quality and water quantity when meeting the indispensable needs of persons. Should an enabling environment be put in place, to generate more appropriate and more adequate regulation?

Water quality and human health are “dependent on macroeconomic policies and the environment that they create”. Yet water can be safely “guarded” from the rights of the political and economic systems, in line with both public and private interests, with appropriate and cost effective measures taken to “prevent the causing of significant harm”. In the absence of effective regulation however, the United Nations confirm that the “characteristics of water give rise to multiple market failures” (e.g. vulnerability to monopoly control, imperfect competition, externalities, uncertainty and imperfect information).

Transparency International confirm the disturbing global trend in some developing countries: “households pay with their health, as poor quality or non-existent water supplies increase their vulnerability to deadly diseases”. In these societies it is ignorance that “opens water policies to manipulation by powerful stakeholders. Bid-rigging and kick-backs inflate the cost of water infrastructure, bribery and embezzlement divert irrigation water away from small farmers and drain irrigation budgets”. All of this also “leads to unchecked water pollution and overuse, putting water supplies at risk – today and for future generations”. Such a path seems to diverge from duty and kindness for “security and happiness”, instead steering more towards “wretchedness and peril”. Should any such ignorance that placed Australia’s pure and fresh water *at risk* be defined as injurious, with an element of just compensation attached for those persons impacted unfairly?

It is in the greater public interest that the Australian population continue to benefit from a public guarantee of pure and fresh water, as seems to be enshrined in the Constitution. There may be a need then to advance a national dialogue: to consider whether the first commissioners have mastered the difficult and complicated subject it is their duty to administer, and - in overcoming such traditional conflicts and limitations - whether their mandate, authority and capacities are sufficient. If it appears probable that there should be change - then the execution of current plans should be postponed, with temporary sanitary provisions taken to more effectively protect fresh water, until more “adequate protections” for public health are placed back into force. It should be re-confirmed that the national water initiative is grounded on the bedrock of social and economic rights, and in line with other international legal principles; and, that such strategy will continue to prevent unnecessary human and economic losses, and improve the conditions of daily life for all Australian people.

Threats to public health are another major consequence of globalization. National borders seem incapable of protecting persons whose governments provide them with some measure of adequate public health. A lack of access to *adequate* water and sanitation in Australia then lowers the protection of other parts of the world to global epidemics, as recent international incidents identified in this paper have amply demonstrated. This might highlight that a new strategic response to the prevention of epidemic and pandemic disease, effective sanitation, and social conflicts is required - based on regional and global cooperation, particularly as regards growing water scarcity. Because of local and regional climate changes, water is becoming more finite and more vulnerable, and the increasing lack of sanitation globally is of major concern.

Governance issues are becoming increasingly important to all well functioning societies. Decisions should be conducive to the objectivity, transparency and predictability of established legal principles, and tend to the promotion of the public good. Such global principles are not limited to public participation and precaution in the protection of minorities and individuals and families from significant harm. They include responsive and accountable government, based on general principles of law - important values such as “justice, equity, good neighbourliness, and the prohibition of the abuse of rights” - without which any right of citizenship in any democratic society can exist whatsoever.

Water will continue to be an article of indispensable necessity in Australia, two-thirds of which is desert, and the right to be guaranteed access to pure and fresh water should not be placed *at risk* by misadventure.

Water and opportunity need to be shared as a public good, on fair and just terms, in the interests of society as a whole. Important decisions on water quality should benefit all persons, without compromising the ability of future generations to meet their own needs - by conserving the health of populations, and the sustainability of societies where free people can live in peace. In this sense, the 'greater' public interest becomes more apparent, for achieving the "global public good" of prosperity and happiness.

*Australian water quality is a national asset that may be irreplaceable*

The processing of sewage and industrial wastewater for human consumption and hygiene in Australia should not be implemented without appropriate public due-diligence, conducted by an independent body. The people need to be informed about fresh water - in an appropriate format - so that informed decisions can be made. The risk is "great public injury". For example, once processed sewage is in the public water systems, it may be impossible to remove insidious and persistent contaminants without rebuilding whole infrastructures. **There are many "acceptable" non-potable applications where a product manufactured from sewage and industrial wastewater should be substituted for potable water, and other associated opportunities for water efficiency and conservation.** Such education of the public is in the domain of public service engineers and public health professionals, who have a strong interest in disease prevention.

There is a need to take another look at the strategic response options to Australia's fresh water crisis again, as more care and greater thought are needed. Over-allocation and pollution of water - that results in *forcing* citizens to treat sewage at great expense for their drinking water use - could be defined as an unreasonable encroachment on the general rights of the public, and this might not be sanctioned by our Constitution or sources of international law. The important question, as always, is - who benefits and who will pay? Armed with proper information on the range of water quality and human health issues, the public opinion might just deem Australia's pure, fresh water to be a culturally unacceptable trade-off. Good public health is too important at the individual, family and community level; in fact, and as discussed throughout this paper, the great risk to the prosperity, happiness and quality of life of the Australian population does not seem worth it. The best means of fresh water supply in Australia's towns and cities should then now be reestablished, through a process of public inquiry in the public interest.

As regards this increasing challenge, there may now be a need for a new paradigm of water quality and human health for sustainable development. It is not possible to predict the values of the social, economic, environmental, political or cultural costs to our society of a failure on fresh water and public health; indeed, that of our neighbours. There is though a history of great epidemic catastrophes throughout the ages - which should serve as a vivid reminder of whole communities being swept off without record or witness. A new governance framework could greatly help in the implementation of holistic water management, public health and climate protection, if it covered in an integrated manner all sub-national government functions on water. In this regard, the United Nations state "it is at the local level that social choices can be usefully developed to clarify what is needed and socially acceptable and to stimulate participation of the population".

Access to pure and clean water and effective sanitation is the necessary basis of our national health, safety and welfare, and that of our future generations. Under the blessings of good government, such has underpinned Australia's competitive advantage, and hence our prosperity and Australian way of life. This has supported the physical, cognitive and emotional development of our children; and thus, the excellence of our academics, physicians, scientists and engineers, the prowess of our sports men and women, the resilience and fortitude of our military, and overall, the general good nature of our people. Australian water quality is another asset that may be irreplaceable. The public guarantee of pure and clean water should not be placed *at risk* now; it may also be just that the principle of preventative sanitary legislation and universal water quality standards will stand for some time, as offering a superior return to any enlightened public.

For human and economic efficiency to appear at the local level - indeed for sustainable development to emerge nationally - the Australian people continue to need a resilient and integral 'public protection of health'. Governments should aim for the best interest of society, to make the condition of citizens as happy and as perfect as they can; which it appears will naturally depend on the amount of "truth, wisdom and justice" comprised in them. Besides Australia's water quality being too valuable to trade off in any arena of economic competition, it should not be forgotten that it is an indispensable necessity for sustaining the creation of population, talent and leaders of democracy in our local communities.

Fresh water is in the best interest of Australian society. When one Australian values set is applied to Section 100 of our Constitution, the protection afforded by this rule to all the public and private interests involved seems to take on much more meaning. The obligation to "equitably share entitlements to the beneficial use of water" in fact appears to be contingent on good water quality and good public health, which should also be protected from "unreasonable injury" for our future generations.

The right of Australians to be guaranteed access to pure and clean water for their basic human existence should be given precedence over private sector uses of fresh water and best economic advantage; there should be no game in relation to this public good, and the many interests of all persons in our society as a whole. The nature of fresh water seems to be that in the absence of prudent and responsible control and management, it has the high potential to injure others more than it can benefit any one individual. As a further safeguard to our Australian Constitution, this generation ought then do something *truly* great - by effectively protecting the values of our health, our civil servants' and our political leaders', and our significant societal gains. This sort of legal precedent might merit establishment by the Australian people for the benefit of the international community.

Legitimate and important international laws and norms of fundamental human rights and environmental sustainability can contribute to the achievement of sustainable development, both in and through water management, and as such, should also influence our domestic decisions. In fact the adoption of such legislation and policies may just bring our Australian values into line with some of the more upstanding sections of the international community. History has shown that the best leaders of democracy and globalisation are born equal and free, and with *adequate* access to pure, fresh water the development and conservation of such healthy and responsible persons can be sustainable. In today's global economic competition, and after 108 years, who could possibly argue that Australia can afford for there to be any such public good neglect or indifference.

**Appendix I – Public Submission to the Department of Environment, Water, Heritage and the Arts on the ‘Draft Water Amendment Regulations 2008’**