

# LEGAL ISSUES AND OPPORTUNITIES FOR WASTEWATER REUSE IN VICTORIA



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## ABSTRACT

Over the last 3-5 years there has been a growing awareness of the opportunity for wastewater reuse as part of our total response to water management. There are now many examples, particularly in rural and regional areas, of reuse of partially treated wastewater on golf courses, parks and for some agricultural purposes.

These responses have to a large extent been the easy ones. Typically what is required is an agreement between the user, for example the golf course committee, and the water authority. This governs the way in which the wastewater will be used and managed, provides indemnities to the water authority and in other ways creates a legal and commercial relationship between the parties.

The precise scope of the indemnities in such relationships is unclear given the provisions of the *Trade Practices Act* and court rulings regarding the 'fitness for purpose' relating to the sale of goods. However, it appears that the sale of wastewater which is acknowledged to be unfit for drinking and suitable for use only under certain conditions as set out in the contract for sale would generally provide a sufficient defence to any action. It is where the water quality goes outside the specifications that difficulties may arise.

So, given that the easy projects have largely been completed, the question becomes: where to now with reuse in order to better use the resource and to reduce potable water consumption.

## 1.0 INTRODUCTION

At least part of the answer, in relation to domestic water use, lies in encouraging the development of cost-effective technologies and plumbing hardware to facilitate reuse at a domestic level.

To put this in context, consider for a moment the proposal being developed by Melbourne Water in relation to the approximately 360 million litres per day of wastewater that is discharged from the South-Eastern Treatment Plant via the outfall to Boags Rocks.

The proposal is to spend a significant sum to upgrade the water quality and to keep treating and pumping the waste into Bass Strait. Melbourne Water has developed a target of recycling up to 10% of the wastewater by 2010. At the present time accordingly to Melbourne Water's publications, 1600 million litres is recycled per annum, representing between 4 and 5 days wastewater production (ie around 1.5% of the annual volume).

Opportunities to increase recycling in a cost-efficient manner are greatly limited and will only be increased by the expenditure of many millions of dollars on water mains to carry treated wastewater from the Carrum area into nearby parts of Gippsland.

There are opportunities to reduce wastewater production at source - by better managing wastewater production and use at the domestic level. A significant reduction in the volumes of wastewater processed by Melbourne Water (and other authorities) could be achieved by diverting bathroom and laundry wastewater (grey water) for toilet flushing and garden use.

This would have the added benefit of reducing potable water demand for an average suburban household by up to around 50-60%.

Alternatively, on large subdivisions, it would be possible for developers to install the so-called 'third pipe' system - using local treatment, holding treated water in large lakes or lagoons and recycling through a separate pipe system for domestic use.

This proposal has been examined by developers on a number of occasions and in the absence of clear support from Community Services Victoria and the EPA, developers have been unwilling to take the risk of liability for the accidental misuse and potential ill-health or environmental damage which might arise.

We need to get serious about these issues and develop appropriate legal mechanisms which allow waste water re-use to be implemented. I want to now explore some of the issues given our current regulatory framework.

## **2.0 THE PROBLEM**

In essence, the problem is the lack of appropriate models and legislative, institutional and training support for their implementation.

In relation to individual household reuse, the EPA has done little or nothing to assist the situation. A bulletin released by the EPA last year provides advice about the regulatory, health and environmental issues associated with household wastewater reuse (Environment Protection Authority, 2001). The bulletin is drafted in a manner which would discourage any reader from perusing wastewater reuse further. One of the stated purposes of the bulletin is to identify household wastewater reuse practices that may be acceptable and those that are unacceptable. However there is no positive message regarding the design and implementation of reuse systems, merely a bullet point list of 19 points to be addressed and problems to be overcome or avoided.

While some individuals have pioneered the modification of existing domestic plumbing to establish on-site reuse systems, there is no design standard established and no basis currently for the manufacture and supply of standard componentry which could be used by plumbers to install reuse systems.

Under Victorian regulations, on-site wastewater treatment is governed by the Septic Tank Code of Practice and the provisions of the *Environment Protection Act 1970*. That Act defines a Septic Tank system to mean a system for the bacterial, biological, chemical or physical treatment of sewage, and includes all tanks, beds, sewers, drains, pipes, fittings, appliances and land used in connection with the system (section 53J). Notably, Sewage is defined to include domestic wastewater.

The interpretation of these definitions means that any form of treatment of wastewater, even simple filtering to remove lint or coagulants so as to allow an irrigation system to operate without blockage, would be regarded as a Septic Tank system and be subject to approval by the local Council health inspector.

If wastewater is taken directly from the household system through a storage tank and is either pumped through a garden irrigation system or used to flush toilets there is no difficulty.

However, there is the potential for a requirement to seek the approval of the local water authority if the connection of discharge pipes from bathroom fittings into the reuse system is regarded as interfering with or a modification to works connected to the sewerage system.

It is no surprise that health inspectors are naturally conservative and are reluctant to approve any system which is outside their normal range of experience and, in particular, a system which is seen as possibly experimental or for which there is no established standard. Similarly, where consent is required from a water authority there are questions regarding the basis on which the authority's officers would assess any such proposal given the lack of appropriate standards.

The problem is a real one for the building and development industries. As indicated earlier, the opportunities for re-use of grey water exist in two forms. One is at the neighbourhood or subdivision level, the other is at the domestic level.

At the neighbourhood or subdivision level, there is the possibility to collect, locally treat and recycle waste water to houses. There the water could be used for toilet flushing and gardens. However, in addition to issues regarding the technical design and approvals for such a system (for which there are no approved standards) there are questions of legal liability in relation to the quality of the water supplied and its potential harm (eg should children drink the waste water and become ill). This position is acting as a major disincentive to developers to adopt more innovative or environmentally sustainable solutions. It is only the large or public sector developers who can afford the time and expertise to fight proposals through the approvals process.

The second form is the domestic level system. However the building industry is highly fragmented with thousands of small builders and subcontractors (plumbers, electricians etc) responsible for the vast majority of home building. In the absence of appropriate industry standards and training it is difficult for builders or individual households to adopt environmentally sustainable solutions in relation to onsite grey water use. Add to this the potential liability issues and it is not hard to see why few builders or developers are interested in exploring options for re-use.

### **3.0 LEGAL ISSUES WHICH CAN BE ADDRESSED**

There are solutions to these problems which would allow the implementation of waste water re-use at both the subdivision level and at the individual household level.

At the subdivision level what is needed is industry acceptance of appropriate design standards and the provision of appropriate statutory indemnities where the water meets a specified quality.

The development of a suitable industry standard which could be adopted at least in Victoria if not nationally should not be difficult. Mechanisms might include a different size of reticulation pipe to minimise the risk of cross connection, colour coding and practical steps such as provision of removal tap handles so that the control of access to the water is provided to each household. Other aspects which might be addressed in a code would be the position of the re-use pipe in any common trenching arrangements.

Amendments to the Water Act 1989 could be made to provide statutory indemnities for authorities and suppliers of waste water which meet an approved standard. The standard could be established through the industry code of practice.

These proposals are only likely to be taken up on large estates where there are economies of scale attractive to the developer. In the early 1990's I was involved in the development of such a proposal for the original Caroline Springs development. Ultimately that project was scuttled by the failure of the developer's engineers and Melbourne Water engineers to reach agreement on the design and costing of the local treatment plant and the legal issues associated with grey water re-use.

Grey water re-use on a single house basis is something which could be implemented for existing as well as new dwellings and could lead to considerable water saving and reduction in volumes of waste water requiring treatment.

What is required is a change to the provisions of the Environment Protection Act 1970 regarding septic tank systems to differentiate systems for the onsite re-use of grey water from systems which are designed to accommodate all household waste, or at least household waste containing faecal contamination. There should be a new code of practice or information bulletin prepared which establishes some appropriate design parameters which either anticipate the development of a new range of plumbing products or are based around the current range of offerings.

To use a practical example, the current EPA information bulletin talks about the need for the application of grey water to the garden by sub-surface irrigation. While the meaning of 'sub-surface' appears clear enough, it is difficult to understand exactly what is meant by this phrase. Most irrigation systems rely on application at or above ground level. Commonly available dripper systems would allow water to be applied at ground level with the drippers covered by mulch. Systems which are genuinely 'sub-surface' require either significantly higher levels of maintenance or are inherently more complex requiring pumps. These issues need to be translated into appropriate design standards using commonly available technology.

In relation to the handling and storage of grey water simple systems need to be developed and approved. It is possible to envisage a system which would use a variety of sized relatively narrow rectangular tanks which could be installed at ground level or partially buried along the side of a house adjacent to existing plumbing services. This could be pressure triggered or linked to a storage tank using a small submersible pump linked to the toilets and the garden watering system. The system would be designed to accommodate the daily waste water generation together with a by-pass to sewer to ensure that waste water did not remain in the system for more than 24-36 hours so as to avoid issues associated with bacteria and odour which arise with the long term retention of waste water.

A code of practice could be developed in a similar format to codes already developed indicating system design and performance requirements. This could include rates of application. A series of tables would allow householders to establish the rate of application related to daily waste water production and the area of garden available. Indemnities for the use of grey water in accordance with the code could be provided and protection from pollution offences under the *Environment Protection Act 1970* could be provided by means of amendments to that act.

Ultimately, the industry needs to drive change in relation to waste water use. The regulatory agencies are likely to remain conservative in their view of the opportunities. It is time for a change in attitude and for that change to be reflected in changes to industry training and changes to established plumbing practices.