

### **3. WATER SUPPLY HAZARDS**

#### **3.1 *Biological contamination***

Standards for biological purity of domestic water supplies are normally quite strict. An entire community could be infected through the contamination the water supply by wastes from a single carrier of pathogenic organisms. Such contamination is most likely to occur through the failure of septic effluent treatment system to adequately purify wastes before the excess water reaches the stream system.

There are many dwellings associated with traditional farming pursuits and with the more recent hobby-farm type development on freehold land in the catchment. These rely on septic tanks and ground absorption for treatment and disposal of waste-waters. Failure of any of these systems may be readily reflected in reduced water quality downstream. Correct design, siting and installation of waste water disposal systems are therefore of paramount importance in minimising such occurrences, particularly when such disposal systems are in close proximity to the stream system of water bodies. Failure of systems on land below Blue Rock Lake are of particular concern – the detention of water in the dam provides some disinfection, but there is little opportunity for natural disinfection of water In the river between the dam and the Moe offtake.

Contamination by animal wastes may not pose the same acute health risks, but the presence of certain micro-organisms often carried by domestic or farm animals may still render water unfit for human consumption. Such contamination is likely where effluent from intensive animal industries, such as dairies or piggeries, is allowed to enter the stream system without adequate treatment. Lesser levels of contamination are likely to occur where stock have free access to the stream system as a source of water.

#### **3.2 *Physical and chemical contamination***

Such contaminants include organic colloids, inorganic colloids, soil particles, nutrients, pesticides residues and heavy metals. The contamination may render the water unfit for domestic consumption or merely unacceptable to the consumer directly or through the induction of turbidity, colour, algal growth, or unpleasant tastes or smells.

Soil particles washed into the stream system through soil erosion may be a matter for concern because of the turbidity created and because they may carry adsorbed substance such as nutrients, heavy metals, pesticides, bacteria and viruses into the stream system. Turbidity may interfere with the efficiency of water treatment processes such as chlorination and reduce the acceptability of the water to the consumer.

Colour may also reduce the acceptability of the water.

There are many unsealed roads and associated stream crossings throughout the catchment. Earth exposed during construction and maintenance of these roads and from the unsealed surface may be washed into the drainage system and delivered into the stream system. The soils of the mid-portion of the catchment are particularly prone to erosion of exposed earth. Specific attention to erosion control and sediment management techniques and to the design and maintenance of the road drainage system is necessary to minimise the contamination of water.

A high level of nutrients (phosphate, nitrate) in the water is undesirable a sit may encourage the growth of algal blooms in the storage which may, in turn, produce unpleasant tastes, smells and toxic substances, and may interfere with water treatment processes.

While nutrients may enter the stream system from any part of the catchment, those agricultural activities which involve the greatest use of fertilisers (horticulture) or accumulations of animal wastes (milking sheds) pose the animal wastes and the minimisation of sheet erosion from horticultural land is required to minimise the hazard.

### **3.3 Water yield and perenniality**

There is clear evidence<sup>4</sup> that the removal of forest tree cover and subsequent regrowth in ash forests elsewhere in Victoria, either through fire or forest operation, may result in an initial increase in annual flow for approximately five years and then a significant losses in total water yield from such catchments for several decades. In such catchments, perenniality of flow has not been a major problem and the extent to which it affected is uncertain.

The extent to which loss of tree cover and subsequent re-growth would affect water yield or perenniality from the Tanjil River Catchment is uncertain. Research to date has concentrated on ash forests. However, these comprise only small proportion of the Tanjil catchment, whereas the major water production areas are the sub-alpine areas of the Baw Baw plateau and the mixed species forest which are in the midcatchment.

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<sup>4</sup> MELBOURNE AND METROPOLITAN BOARD OF WORKS, 1980. Summary of Technical Conclusions to 1979.

LANGFORD, K. J. 1976. Change in Yield of Water Following a Bushfire in a Forest of *Eucalyptus regnans*. *J. of Hydrol.* 29:87-114.

Perenniality itself is unlikely to be a significant problem in the catchment, however increased peak flows could readily initiate bank erosion and thus a reduction in water quality.

The possible effects on water yield of timber harvesting and subsequent regrowth over large areas should therefore be borne in mind by the relevant management bodies.