

SUBMISSION NO. 53

**Submission to Inquiry into
Future Water Supplies for Australia's Rural Industries and Communities**

I live in central north Tasmania in the community of Lorinna which is not connected to the Tasmanian Hydro Grid. My partner and I operate a small business designing and installing renewable energy systems, specialising in micro-hydro.

Since 1975, we have monitored the flows of local streams to investigate most efficient turbines for different situations. We installed our own micro-hydro system (servicing four households) in 1987, and a community Grid in 1995, which services nine connectors including the community hall. The majority of residences in Lorinna are powered by individual micro-hydro set-ups, with others connected to photo-voltaic cells.

In 1992, Forestry Tasmania clearfelled the watercatchment of Olivers Creek for the establishment of eucalyptus nitens plantations. The difference in the domestic water supply became apparent to local residents during the first winter. In April '93 we informed Alan Watson (FT District Forester) that water ran in sheets across the ground when it rained heavily, but this local knowledge was not only ignored, we were told our information was not accurate.

In July, when heavy rain fell (washing soil and herbicides into the domestic supply, contaminating water measured at kitchen taps), the watercatchment - with no vegetation to intercept the rain, no leaf litter to soften the force of the water and no deep-rooted plants to carry the moisture deep into the earth to be released in drier times - was severely awash.

The creeks in Lorinna have not yet recovered from the clearing of the catchment in 1992. In winter the flood events are more severe and in summer the creeks dwindle quicker and earlier than in the past. As many local residents generate their electricity needs and gain their domestic water supply from Olivers Creek, the impact of reduced water quantity is substantial, particularly for two properties irrigating small-scale, high-value commercial crops (one watering flowers in a hothouse, the other organic vegetables).

The State of the Environment Report (1997), Inland Waters and Wetlands, in the section entitled Effects of Land Use (3.7) quotes Victorian and international studies concerning the way trees use water and the likely impacts of forestry on water quantity.

Trees use water in two ways:

- ***By trapping some of the rainfall before it can reach the ground (interception)***
- ***By extracting water from the soil (transpiration).***

Water use depends on the:

- ***Density of foliage***
- ***Spacing between trees***
- ***Amount of water available***
- ***Energy available for evaporation***

Secretary: *after*

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▪ **Capacity of the tree 'pump'.**

Vegetation changes over large areas is a major issue for water resource managers. Conversion of existing stands of eucalypt to pine, pasture to either eucalypt or pine, or existing tree cover to plantations, all change water yield.

Research also suggests that the following changes in water yield occur during the life-cycle of a plantation:

- **Water yields will increase immediately after logging**
- **Water yields will be reduced after two to five years of plantation growth**
- **Water yields will decrease to about 10-30% below pre-logging yields**
- **The largest reduction in water yield will be just before the trees reach full leaf canopy**
- **Once full canopy has been reached, water yields will increase slowly to pre-logging levels.**

The long-term water yield from sites redeveloped as forestry plantation can easily decrease by up to a third. Pasture replanted to forest can be expected to yield half as much water.

Rural communities are very aware of the impact of forestry clearfelling and plantation establishment on water quality and quantity. The science supporting these on-the-ground observations has been available for years, but the prevailing political mentality which supports the forestry industry and is blind to the social, economic and environmental impacts, prevents changes to the current destructive practices.

In Tasmania, the state government encourage the construction of the Meander Dam to facilitate irrigation in the Meander area. Forestry and agricultural practices have not yet been addressed to keep moisture on site, eg. keyline ploughing to retain moisture in the soil, selective forestry management to reduce the area of canopy opening and to maintain the hydrological cycle of the forest.

If we continue to seek high-entropy quick-fixes to problems without investigating the causes of these problems, the problems will persist.

Here is a wonderful opportunity to educate farmers in genuine sustainable land management, emphasising higher-value crops (such as organics which focus on humus content of soils and soil health) and including shelter belts of deep-rooted plants. The agricultural practices which were imported here with our British forefathers have proven to be inappropriate to the Australian conditions. We need to abandon these practices and farm more intelligently to suit the prevailing environment.

Similarly, the current regime of clearfelling and burning of our forests has severe negative impacts on our rural water supplies. We must address this issue before we lose more of our forest cover or convert more pasture or native forest to plantations.

The following is a brief story from an associate in the north-east of Tasmania who talks about frost, water and weather.

Frost, in particular night frost in combination with bare earth, has a major influence on water quality (and quantity, by its evaporate action). Every 24 hours the upper layer goes through a freezing, thawing cycle, a highly erosive process, particularly on sloping ground.

In addition to what has been said here on micro climatic changes caused by the clear cutting of vast areas, especially in mountainous terrain, it must be remembered cold air reacts just like water, following its courses down hill. That means not only are the clear cut areas directly affected, but the "flood plains" as well, with a reversed situation in summer. That is, the heated air coming off the previous cool mountains is displaced by cool air rushing up, with at times destructive force. These phenomena are quite independent from the general global warming syndrome.

Harking back to the clever pre-election advertising, remember, 86% of Old Growth Forests are Protected, starting smallish, increasing in size. That is now a thing of the past, the advertiser obviously believing the need of further brainwashing of people to be unnecessary.

However, a short while ago, Forestry Tasmania began having its temperature readings at Fingal included in the ABC weather reports, something hitherto quite unknown. Thus falling temperatures read out daily, are being absorbed as a common occurrence. In this context, at the extreme top end of the Fingal Valley (South Esk River), we recorded this winter already a longer period with lower night temperatures than ever before.

In closing, I believe that as a society we have sufficient understanding of the science of weather to be courageous in opposing some appalling practices in forestry and agriculture such that the overall outcome is enhanced water availability, improved water quantity, economic increases and social benefit.

I call upon the committee to instigate a Royal Commission into plantation forestry in Tasmania, particularly regarding the 2020 Vision.

**Annie Willock
Spokesperson, Tasmanian Cleanwater Network,
Shoshln, Lorinna
PO Box 105, Sheffield
Tasmania, 7306**