



Forests, Water and Wood

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Forests play an essential role in maintaining healthy catchments and streams, and in delivering high quality water into storage dams for domestic use. All the elements of forest ecosystems require water to survive and grow. Therefore, not all rain falling in forested catchments finds its way into streams and dams.

Pastured, agricultural catchments with few trees would permit more run-offs and deliver more water into storages. However, it would be expected to be of lower quality.

The recent long-term drought and expectations of less rain in the future has generated considerable concern about the adequacy of water supplies for Australian cities, including Melbourne.

Melbourne is reportedly one of just a few major cities in the world to draw its water wholly from forested catchments. These catchments cover 157,000 hectares of national park and state forest north and east of the city.

Melbourne's water is considered the best quality and most drinkable of all capital cities in Australia and yet it is the only city which has active forest harvesting occurring extensively in its catchments.

Wood Production in Catchments

All forests are part of a catchment, so all wood production occurs in catchments. However, not all catchments are used to collect and store water for human use. In Victoria all timber harvesting is conducted in accordance with the Code of Forest Practices for Timber Production which has been designed to minimise environmental impacts, including to soil and water values.

Wood production in Melbourne's water catchments

Wood has been harvested from parts of Melbourne's catchments for decades. Currently around 13 per cent of the catchments are available and suitable for timber production on an 80 year rotation.

Annual harvesting in the accessible, available and suitable portion of Melbourne's catchments is limited to a maximum of 250 hectares, or 0.16 per cent of the total catchment area.

Demand for water is growing. Improved water yields within catchments supplying water to Melbourne will be important in securing the city's future supplies. However, the timber industry provides valuable timber products for all Victorians as well as jobs and economic benefits in regional Victoria.

Timber produced from State forests within Melbourne's water catchments is of the highest quality. It is the most important hardwood resource for value adding in Victoria – if not Australia. It is VicForests' most valuable resource comprising around 15 per cent of log sales revenue.

Some 65,000 ha (or around 40 per cent) of Melbourne's catchments are comprised of regrowth from the 1939 'Black Friday' bushfires. Virtually the whole of Melbourne's catchments where timber harvesting is permitted is fire regrowth.

About half of the timber harvesting in Melbourne's catchments occurs in State forests in the Thomson Dam catchment. The rest occurs in parts of four Yarra tributary catchments – Armstrong Creek, Cement Creek, Starvation Creek, and McMahons Creek.

The Thomson Dam was the last of Melbourne's storages to be built. It was commissioned in 1980 and was meant to drought-proof the city. Timber production had occurred in the surrounding forests for decades before the dam was built and was permitted to continue in much of the new dam's catchment.



Regrowth water use – logging versus fire

Logging – The controversy over ‘catchment logging’ is based around the increased rates of water use by young regrowth compared with mature forests and ‘old growth’ forests. Timber harvesting effectively converts an older forest into young regrowth which transpires more water because it grows faster, thereby reducing the amount of water that can run-off into streams and dams.

Catchment research around Australia has shown that immediately after logging, there is a short three to five year period of increased run-off as regrowth becomes established. Thereafter, there is a significant reduction in run-off for around 20 years as regrowth develops. Following this, run-off slowly returns to pre-harvest levels as regrowth ages. All forests comprise a complex mosaic of age classes and structures.

The case against logging is that if forests were left undisturbed to grow into old age, more water would run-off into streams and dams. This is an unrealistic argument because it presumes that regrowth can be eliminated from forests when, in reality, periodic wildfires and other natural events will always kill trees and stimulate replacement regrowth.

Fire – Compared with logging, which is restricted to minor parts of catchments across Victoria, fire is a greater threat to water supplies.

Although logging creates regrowth, it is limited to small patches spread across the landscape over decades. It is conducted using protective measures such as buffers and filter strips that eliminate direct impacts to streams and watercourses, and other measures that minimise the chance of erosion.

By comparison, wildfire can burn through whole catchments in a matter of days, destroying everything in its path, directly affecting streams and watercourses, and initiating widespread erosion.

For example, the 2003 Alpine fire in north eastern Victoria burnt over a two month period, during which time it killed 88,000 hectares of forest and severely scorched a further 439,000 hectares. The regrowth that has resulted from this is expected to reduce in-flows into the Murray River by 430 billion litres per annum until 2050.

The benefits of timber production in actively managing water catchments

Despite claims that timber production degrades water catchments, in fact, its continuation provides substantial benefits through the provision and maintenance of infrastructure and tools for active forest management. Active forest management provides:

- better preparedness for dealing with the threat of fire
- opportunities to increase water yield through forest thinning.

Commercial forestry generates revenue through log sales. This contributes significantly to the infrastructure required to assist in the management of wildfires through the:

- maintenance of road networks for rapid early response
- provision of an on-tap resource of people with good local knowledge
- provision of readily available fire fighting machinery working in the area
- maintenance of an experienced workforce through being required to deal with fire as part of day to day responsibilities ie. through conducting fuel reduction burns and regeneration burns.



Thinning of regrowth can significantly increase water yield

Research has shown that forest thinning can significantly boost run-off into storages. Reducing the number of trees in regrowth stands alleviates their impact on reducing run-off. The benefits of thinning are highly variable depending on its intensity, the forest type and catchment rainfall.

Many Australian and overseas studies have examined the hydrological effects of thinning. Several studies have been done in mountain ash regrowth from the 1939 bushfires in Melbourne's catchments.

In view of the expectations of a hotter and drier future, management authorities across all public land tenures may need to seriously consider undertaking substantial programs of regrowth thinning in regions badly affected by fire. For example, future thinning of regrowth in north east Victorian catchments burnt in 2003 could substantially improve Murray River flows compared with the alternative of doing nothing.

There are good reasons why it is desirable to restrict human activity in water supply catchments, but it should be acknowledged that carefully regulated active management within parts of catchments can play an important role by providing a range of community benefits.

Putting things into perspective

The environment movement's campaign to end timber harvesting in Melbourne's catchments is centred around the claim that it is responsible for reducing stream flow into storages by 50 per cent. This is wrong given that just 0.16 per cent of the total catchment area is harvested each year, and that only 13 per cent of the catchments are planned for harvesting on an 80 year cycle. Other factors that put anti-logging claims into perspective are that:

- water yield from the affected catchments will continue to increase over time as 1939 regrowth ages, regardless of timber harvesting
- ceasing current timber harvesting may increase catchment water yield by 3–4 per cent, but continuing to harvest by regrowth thinning could enhance water yield by more depending on how much thinning is permitted



- on-going timber production also has environmental benefits. High quality Victorian Ash sawn timber from Melbourne's catchments competes directly with hardwoods imported to Australia from developing countries. The volume of imported tropical timbers suspected of being from illegal rainforest logging already exceeds Victoria's native forest sawlog harvest. Further cuts to local production will encourage more tropical deforestation.

The benefits of abolishing logging are only theoretical and relatively insignificant in addressing Melbourne's increasing water demand – but such a strategy would have significant socio-economic and environmental impacts.

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