

**A REPORT ON THE
TOMAHAWK CREEK (GEMBROOK)
WATER SUPPLY CATCHMENT**

**A Proposal for Proclamation
Prepared for consideration by
The Land Conservation Council**

By

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TABLE OF CONTENTS

1. THE CATCHMENT AND WATER RESOURCE	4
1.1 INTRODUCTION	4
1.2 STREAMFLOW	4
1.3 WATER QUALITY	4
2. CATCHMENT DESCRIPTION.....	4
2.1 CLIMATE.....	4
2.2 PHYSIOGRAPHY AND GEOLOGY	6
2.3 SOILS AND VEGETATION.....	6
3. LAND TENURE AND USE	6
3.1 LAND TENURE	6
3.2 LAND USE.....	6
3.3 LAND CONSERVATION COUNCIL RECOMMENDATION	8
3.4 PLANNING CONTROLS.....	8
4. WATER QUALITY HAZARDS	9
4.1 BACTERIAL CONTAMINATION.....	9
4.2 SEDIMENT AND TURBIDITY	9
4.3 ROADING	9
4.4 CATCHMENT DISTURBANCE	9
5. RECOMMENDATION.....	9

LIST OF FIGURES

FIGURE 1 - LOCALITY PLAN	3
FIGURE 2 - TOMAHAWK CREEK (GEMBROOK) WATER SUPPLY CATCHMENT.....	5
FIGURE 3 - LAND CONSERVATION COUNCIL RECOMMENDATIONS	7
FIGURE 4 - TOMAHAWK CREEK (GEMBROOK) WATER SUPPLY CATCHMENT PLAN NO. S-1368.....	10

Figure 1 - Locality Plan

LOCALITY PLAN
**TOMAHAWK CREEK (GEMBROOK)
WATER SUPPLY CATCHMENT**



THE TOMAHAWK CREEK WATER SUPPLY CATCHMENT

1. THE CATCHMENT AND WATER RESOURCE

1.1 *Introduction*

Tomahawk Creek is located on the southern boundary of the Yarra River catchment, between Gembrook and Powelltown (see figure 1).

An area of 337 ha at the headwaters of Tomahawk Creek is harvested for water supply by the Gembrook, Cockatoo and Emerald Waterworks Trust (see figure 2).

This area is south of the McCraes Creek catchment, and west of the Bunyip River catchment, both of which have been proclaimed and for which land use determination have been made. The Tomahawk Creek catchment is in the Shire of Upper Yarra.

This report follows investigation of the Tomahawk Creek catchment for proclamation.

1.2 *Streamflow*

Flow in the Tomahawk Creek is not gauged, although the adjacent, gauged McCraes Creek catchment has an average annual discharge of about 200 megalitres (ML) per square kilometre. Surface flow at this gauge has ceased over dry periods, however flow in Tomahawk Creek continued over the very dry 1982-83 summer.

1.3 *Water Quality*

The Tomahawk Creek provides the good quality water expected from a largely undisturbed forested catchment. Since the offtake became operational in August 1983, bacteriological analyses have shown very low counts of the indicator organism *Escherichia coli*. Longer-term monitoring in McCraes Creek has shown low to moderate counts after heavy rain and in the warmer months.

Water quality sampling for physical and chemical parameters in McCraes Creek is infrequent, but results have shown good quality except for colour (70-80 platinum cobalt units). Suspended solids and iron content may reach moderate levels.

Up to 3.5 ML per day is abstracted from Tomahawk Creek, with approximately 500 ML being used annually, out of the current total usage of 1200 ML. The Trust expects to require 2000 ML annually in future, this volume being obtained by pipe duplication and booster pumping. The offtake point is a small weir which affords very little detention time, although there is considerable detention time in the 50 ML Gembrook Reservoir. Water entering the reticulation is treated by chlorination, however forty houses are supplied from the main between the weir and the chlorinator, by agreement with the Trust.

2. CATCHMENT DESCRIPTION

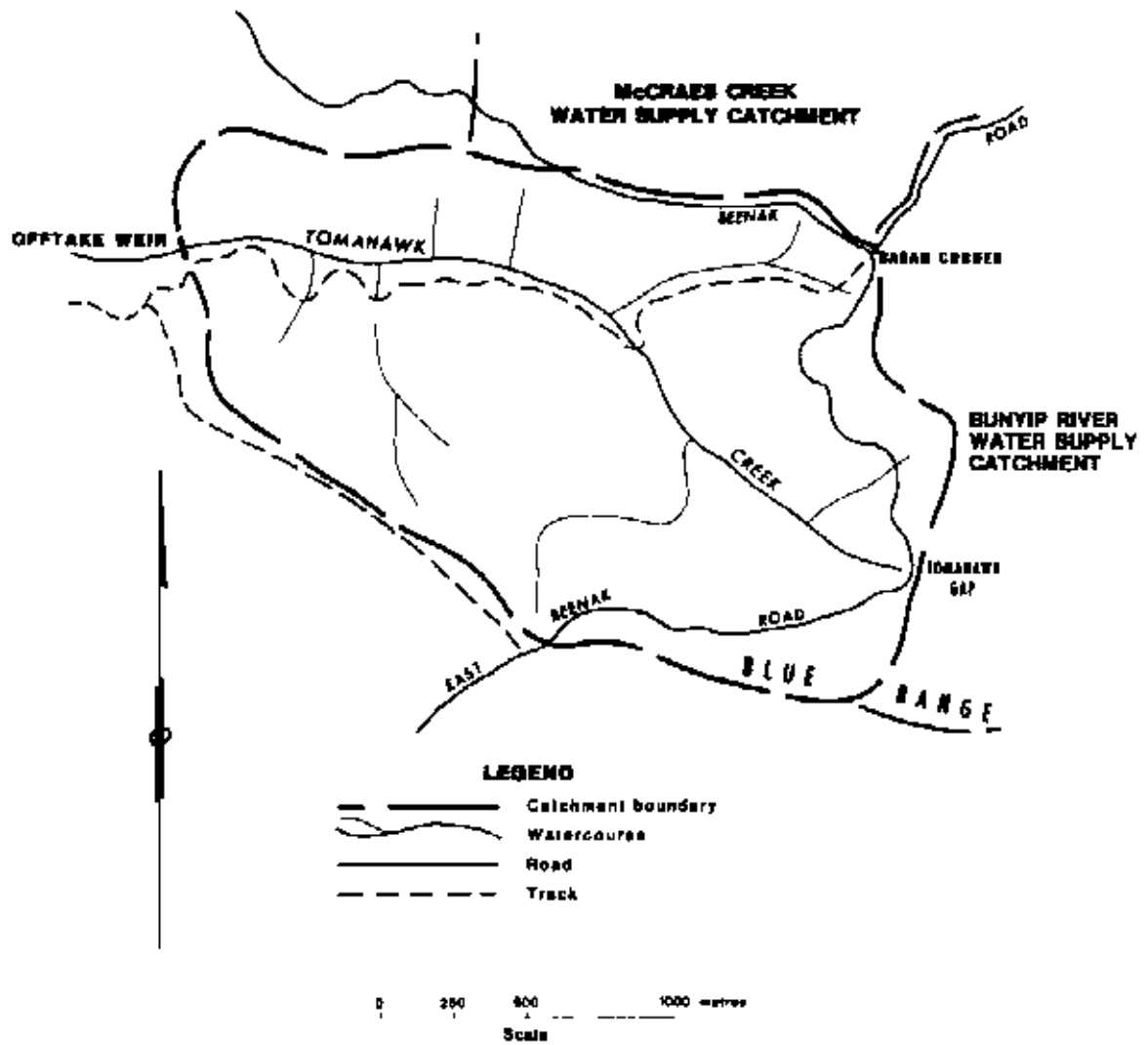
2.1 *Climate*

The closest climatic station to the catchment is Beenak, 2 km to the northwest. Records were taken there from 1878 to 1952, and mean annual rainfall over that period was 1446 mm. A plateau distribution of rainfall at about 110 mm per month occurs from March to December, with falls of about 70 mm in January and February. The highest rainfall occurs in October with a minor peak in June.

This area is subject to heavy storms: over five days in April 1901 a storm of 376 mm was recorded. Most months have records of one-day storms of over 75 mm. Estimated temperatures are two to three degrees cooler than Melbourne with mean maximum daily temperatures of 25° in January and 11° in July, and mean minimum daily temperatures of 9.5° in January and 2.8° in July.

Figure 2 - Tomahawk Creek (Gembrook) Water Supply Catchment

TOMAHAWK CREEK (GEMBROOK) WATER SUPPLY CATCHMENT



Availability of moisture does not limit growing season in any month, but cool temperatures may reduce plant growth in winter.

2.2 *Physiography and Geology*

Tomahawk Creek flows into Shepherds Creek, which is a tributary of the Yarra.

The catchment falls from an elevation of 600 m near Tomahawk Gap, to approximately 335 m at the water supply offtake, over a streamflow distance of only 3 km.

Apart from some gently-sloping ridgetops at the western extremity of the Gregory Plateau, the topography is steeply dissected, with long slopes of from 40 to 70% and short slopes over 90%.

The catchment is composed of Devonian period porphyritic granite of the Tynong Granite group. This is relatively deeply weathered, resulting in soils containing much coarse-grained and also finer-grained material.

2.3 *Soils and Vegetation*

Friable brown gradational soils with a dark organic surface horizon are found across the catchment, with shallow friable brown gradational soils on the crests.

On the very steep south-facing slopes along the north side of the catchment, an open forest IV of mountain ash occurs, with mountain grey gum, messmate stringybark and some ash on the more gentle west-facing slopes at the head of the catchment. There is also an area of regrowth mountain ash with a thick wattle understorey at the east end of the catchment.

On the drier south side of the catchment an open forest III of mountain grey gum and messmate occurs on sheltered aspects and in gullies, while silvertop, messmate and narrow-leaf peppermint occur in open forest III formation in various mixtures on more exposed sites, ridges and steep north-facing slopes.

3. LAND TENURE AND USE

3.1 *Land Tenure*

Forested public land makes up 97% of the catchment.

The parish plan for Beenak indicates that much of the catchment was surveyed for alienation. If these allotments were alienated however, most were apparently resumed by the Crown, as the majority of the catchment was dedicated as Reserved Forest in 1935.

One Freehold allotment comprises the remaining 3% of the catchment.

3.2 *Land Use*

On public land, those mountain ash areas which are accessible have a high capability for hardwood timber production, potential uses being for flooring, architraving and panelling. The silvertop and messmate (mixed species) forests have a moderate capability for timber production, the hardwood being suitable for house framing and general construction.

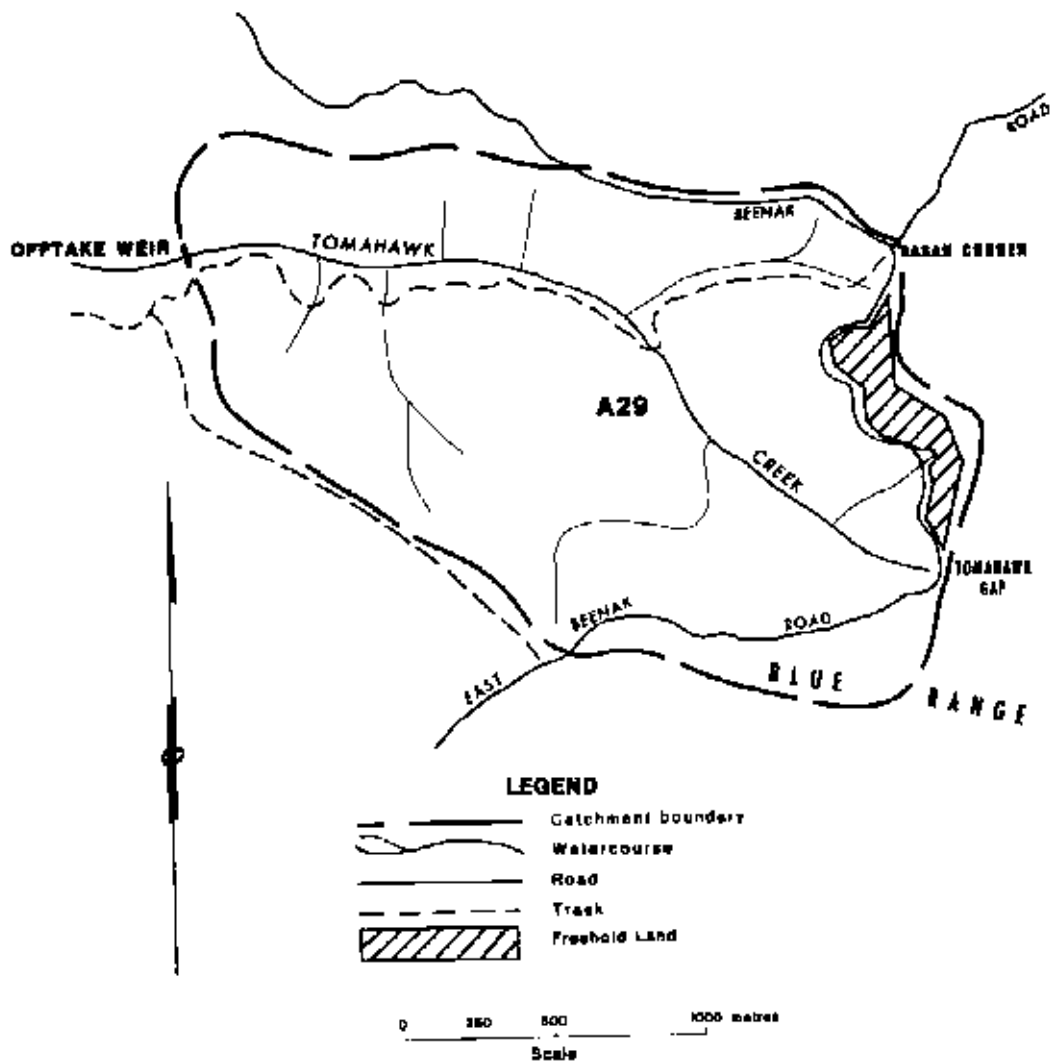
The present stands consist of regrowth from past logging, the 1939 wildfire, and land clearing. No harvesting of the ash forests is carried out at present. Some harvesting of the mixed-species forests in the Tomahawk block, which includes the catchment, is scheduled in the next five years.

The Division of Forests is proposing to develop a walking track in the Tomahawk Creek valley, which will traverse the catchment high on the north side to Basan Corner, then southwards to Blue Range.

Figure 3 - Land Conservation Council Recommendations

TOMAHAWK CREEK (GEMBROOK) WATER SUPPLY CATCHMENT

PLAN No. B-1368A



A29 Yarra Valley Multi Purpose Park-Hardwood and Recreation Zone

The freehold allotment, which was partly cleared, contains regrowth mountain ash and wattles.

3.3 Land Conservation Council Recommendation

The public land in the Tomahawk Creek catchment is included in the Yarra Valley Multi Purpose Park recommended by Council. This recommendation was revised and accepted by the Government in 1980 (see figure 3).

The relevant zone within this park is Recreation and Hardwood. and the land is to be used to:

- "a) provide informal recreation, especially along the roads and tracks
- b) conserve native animals And plants
- c) protect water catchments
- d) produce hardwood timber and other forest produce as defined in the *Forests Act* 1958. in a manner that would not reduce landscape values, as seen from main roads through the forests and from the major roads outside the forests."

The Division of Forests manages the area in accordance with the Government's land use decisions.

3.4 Planning Controls

The catchment is in the Shire of Upper Yarra, which has an Interim Development Order. The freehold block is zoned rural, and a house, clearing, or any other use requires a permit. Subdivision of this allotment would not be possible under the Order.

The area is also subject to the Upper Yarra Valley and Dandenong Ranges Authority's Regional Strategy plan, Section 5 of which covers water resources. An extract from this section states:

"(a) All use and development of land within proclaimed water supply catchments shall be carried out in accordance with the Soil Conservation Authority Land Use Determinations and a permit granted by the Responsible Authority.

(b) Following consultation with the Soil Conservation Authority the Responsible Authority shall prohibit uses and activities which may have detrimental effects on water quality."

Section 4 of the Strategy Plan deals with Public Land Policies. There are 22 policy clauses in this section, grouped under water resources, timber resources, recreation, research, education and general headings. None of these relates specifically to the Tomahawk Creek catchment."

4. WATER QUALITY HAZARDS

4.1 *Bacterial Contamination*

While recent bacterial counts have been very low, It is expected that irregular higher counts will occur. These would be most likely to result from animal activity at the weir pool. Disinfection by chlorination should continue to be carried out, to minimise the effects of such pollution.

4.2 *Sediment and Turbidity*

The sandy soils developed on the granite parent material are naturally erodible, and tend to erode during storm runoff events or when disturbed. Following past erosion the main creek course has a substantial bedload of coarse sand. In McCraes Creek catchment similar conditions occur, and the conventional weir at that offtake requires annual removal of the trapped sediment to prevent blockage of the pipe intake or the transport of sediment along the main.

The Tomahawk Creek offtake however is designed with a self-cleaning, borehole screen at the pipe intake to prevent Ingress of bedload sediment.

The fine soil material produced by weathered granite and decomposition of forest floor litter contribute to the occasional moderate suspended solids and turbidity levels in Tomahawk Creek water, following soil disturbance or storms.

4.3 *Roading*

Roading on the granitic soils is likely to be a continuing minor problem. Careful attention to construction and maintenance of road and track drainage is important to limit adverse effects on the water supply. Many tracks in the general area are closed to vehicle access, and consideration should be given to closing other roads and tracks If water supply is being adversely affected.

4.4 *Catchment Disturbance*

Of the likely uses of catchment land, timber harvesting has the potential for greatest impact on the condition of this catchment. The slopes with mountain ash are steep to very steep, and drain directly to the creek.

Particular attention will need to be paid to aspects of catchment protection such as stream and drainage line buffer strips, closed period, maximum slope and reclamation of tracks, in the forest management prescriptions used for harvesting operations.

5. RECOMMENDATION

That the Land Conservation Council recommend to the Governor-in-Council under section 5(1)(b) of the *Land Conservation Act* 1970, that the catchment as shown on plan No.S-1368 (figure.4) be proclaimed under section 22(1) of the *Soil Conservation and Land Utilization Act* 1958.

Figure 4 - Tomahawk Creek (Gembrook) Water Supply Catchment Plan No. S-1368

