

**A REPORT ON THE
BRITANNIA CREEK CATCHMENT**

**A Proposal for Proclamation
Prepared for Consideration
by the - Land Conservation Council**

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INTRODUCTION

In its final recommendations for the Melbourne Study Area, the Land Conservation Council recommended that the catchment to the Yarra Junction Waterworks Trust offtake on the Britannia Creek be investigated by the Soil Conservation Authority and that, if appropriate, be recommended for proclamation.

This report is the result of such an investigation and is presented for consideration by the Land Conservation Council. The report recommends the proclamation of the catchment to Britannia Creek to the offtake point at Britannia weir.

SUPPLY SYSTEM

Yarra Junction Waterworks Trust is the authority responsible for the management of water supply from Britannia Creek catchment to the townships of Yarra Junction and Wesburn.

A small weir known as Britannia weir serves as the offtake point in the west of Britannia Creek catchment. From this weir, water gravitates into the treatment plant, and from there through a 225 mm main to Yarra Junction and Wesburn service basins, with capacities of 0.54 ML and 1.35 ML respectively.

A total population of 2,800 is supplied from this system. However, during school vacations in summer, several thousand Brownies and Girl Guides camp in the area at Britannia Park, thus greatly increasing the stress on the water supply during periods of reduced summerflow.

For most part of the year, flow of water from the offtake to the two storage basins through the treatment plant is turned off at night. During the summer period when the demand is greater, the flow of water and its treatment are allowed to continue at night in order to maintain sufficient water supply.

WATER QUALITY AND TREATMENT

Bacteriological testing of raw and treated water from Britannia Creek is carried out at monthly intervals by State Rivers and Water Supply Commission. Turbidity is measured only occasionally. The test results available for the past five years compared with those of the 1950s show an improvement of physical and chemical qualities of the water supply. The most recent test results available of water quality parameters after treatment are, with the exception of biological parameters, within the range required by WHO and Australian standards for potable water.

The treatment of water includes removal of coarse material, clarification and correction of pH. Bacteriological test results indicate that the *E. coli* counts frequently exceed Australian and international standard limits. The Yarra Junction Waterworks Trust, therefore, is now considering introduction of chlorination in order to upgrade the water quality.

THE CATCHMENT

a) General

The catchment to the offtake on Britannia Creek is reserved forest and covers approximately 17.9 km

It is located in the Parish of Warburton, Upper Yarra Shire, at 37° 47' latitude south and 145° 39' longitude east and can be found on Gembrook mapsheet 1:50 000. The Britannia weir is located on the west side of the catchment near the Britannia Creek road. The catchment is about 6 km long from west to east and about 3 km wide from north to south.

There are no houses within the catchment except a hut that is used occasionally by a walking club as a base camp. An unsealed Forest Commission road follows the Britannia Creek through the middle of the catchment from west to east. A number of small logging and walking tracks branch off this road throughout the catchment. There is also a four-wheel drive track that follows the ridges around the perimeter of the catchment. The elevation of the catchment ranges from approximately 215 m at the Britannia weir to about 825 m at its highest point.

The nearest township is Wesburn, which is about 6 km north-west of the centre of the catchment. The catchment is 80 km east of Melbourne within the Melbourne Study Area of the Land Conservation Council.

b) Geology and Topography

The catchment is occupied by igneous rocks, namely Warburton granodiorite of upper or middle Devonian period. Warburton granodiorite is noted for the common presence of quartz nodules with irregular shape and varying size. Similar geological formations continue both to the north and south, whereas some changes occur in the rock formation just beyond the eastern and western boundaries.

Britannia Creek flows almost in the middle of the catchment from east to west and is enriched by some 21 tributaries on both sides. Some of these tributaries flow intermittently whilst a considerable amount of surface runoff joins the Britannia Creek directly from adjacent slopes.

Generally the catchment terrain ranges from steep to very steep slopes covered with tall open forest of different density, including areas regenerated after logging.

c) Climate

There is no weather station within the catchment area. However, rainfall data has been recorded in nearby towns of Warburton to the north and Powelltown to the south of the catchment for 35 and 95 years respectively. The mean annual rainfall in Warburton is 1344 mm and it increases towards the south to 1501 mm in Powelltown. It can therefore be assumed that the average annual rainfall in Britannia Creek catchment lies somewhere between 1350 to 1500 mm. The driest month in Warburton is February with 73 mm and in Powelltown is January with 69 mm rainfall. The wettest month in Warburton is October with 144 mm and in Powelltown is May with 166 mm. Brief but heavy rainstorms are common in this area.

Temperatures are recorded only in Powelltown. On average, the temperature exceeds 32⁰ C on about 14 days per year, and there are approximately ten severe frosts every year with temperatures well below 0⁰ C.

d) Soils

Soils in Britannia Creek catchment have developed from Devonian granodiorite. They are friable, brown gradational soils with a deep profile, i.e. 2 m and more over most of the catchment. The soils there have a sandy loam surface texture with a high organic matter content of 14.5%. The particle size distribution through the profile provides excellent permeability in these soils, and the water holding capacity is good due to high organic content. The top soil contains about 20% silt and it decreases with the depth, while clay content increases and the sand fraction remains approximately constant.

The soils, in combination with high rainfall, provide favourable conditions for regeneration following logging operations.

e) Vegetation

The catchment area is covered predominantly by native vegetation and can be classified as an open forest. However, much of the original plant communities have been disturbed and modified by logging, especially on boundary ridges to the north and south.

Roughly three original vegetation communities can be recognised in Britannia Creek catchment.

The first community, which is more widely spread than the other two, includes Mountain Ash and Alpine Ash as dominating species.

The second community is distinguished by the presence of Myrtle Beech and Southern Sassafras associated with a great number of tree fern varieties. This community is still in relatively good natural condition, containing numerous old trees. This community is usually found in sheltered gullies and on steep slopes. It contains little timber of commercial value and therefore has remained relatively undisturbed by both loggers and occasional bushfires.

The third plant community is recognised by the presence of Silvertop and Messmate which are typical of dry sclerophyll forest. This community is found mainly on the south-west ridge of the catchment.

Logged areas are usually resown with Mountain Ash and Alpine Ash under the supervision of Forest Commission officers. Logged areas appear to recover and re-establish fairly quickly. A number of undesirable exotic species,

such as Blackberry, Spear Thistle and Black Nightshade, have intruded into the catchment. Blackberries are found along streams and roadsides, whereas the other exotic species grow mainly on roadsides.

LAND USE AND LAND TENURE

The whole catchment, including the offtake area, is reserved forest in the Yarra Valley and is public land under Forest Commission management. The offtake area is leased to the Yarra Junction Waterworks Trust on an annual basis.

As mentioned earlier in this report, a driveable unsealed Forest Commission road along the Britannia Creek passes through the catchment and a number of tracks branch from this road. This road and its connecting tracks are used by logging contractors, Forest Commission officers, tourists and trail bike riders.

Current land use of the catchment comprises: water production, timber production and recreation. Timber production is controlled by the Forest Commission and is contracted to a logging firm to harvest timber from 20 ha of forest per year. Recreational activity is increasing rapidly and is a concern to the Yarra Junction Waterworks Trust as it may adversely affect water quality.

In its final recommendations for the Melbourne Study Area, the Land Conservation Council recommended that much of the public land in the Yarra Valley catchments, which includes Britannia Creek catchment, become a multi-purpose park. At the direction of the Minister for Conservation, the Council reconsidered land use in these catchments and has recommended a park of smaller area, with a zoning plain essentially the same as in the original proposal.

The zones falling within the Britannia Creek catchment, shown in Figure 1, are as follows:

Recreation and hardwood -

That the land within this zone 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.

Hardwood production -

That the land within this zone be used to:

- (a) produce hardwood timber
- (b) conserve native animals and plants, and provide informal recreation to the extent compatible with (a) above
- (c) preserve landscape values as seen from the major roads outside the forests.

The water supply facility, which is managed by the Yarra Junction Waterworks Trust, is not included in the park. The extent of the buffer zone, however, is subject to the recommendation on water production as follows:

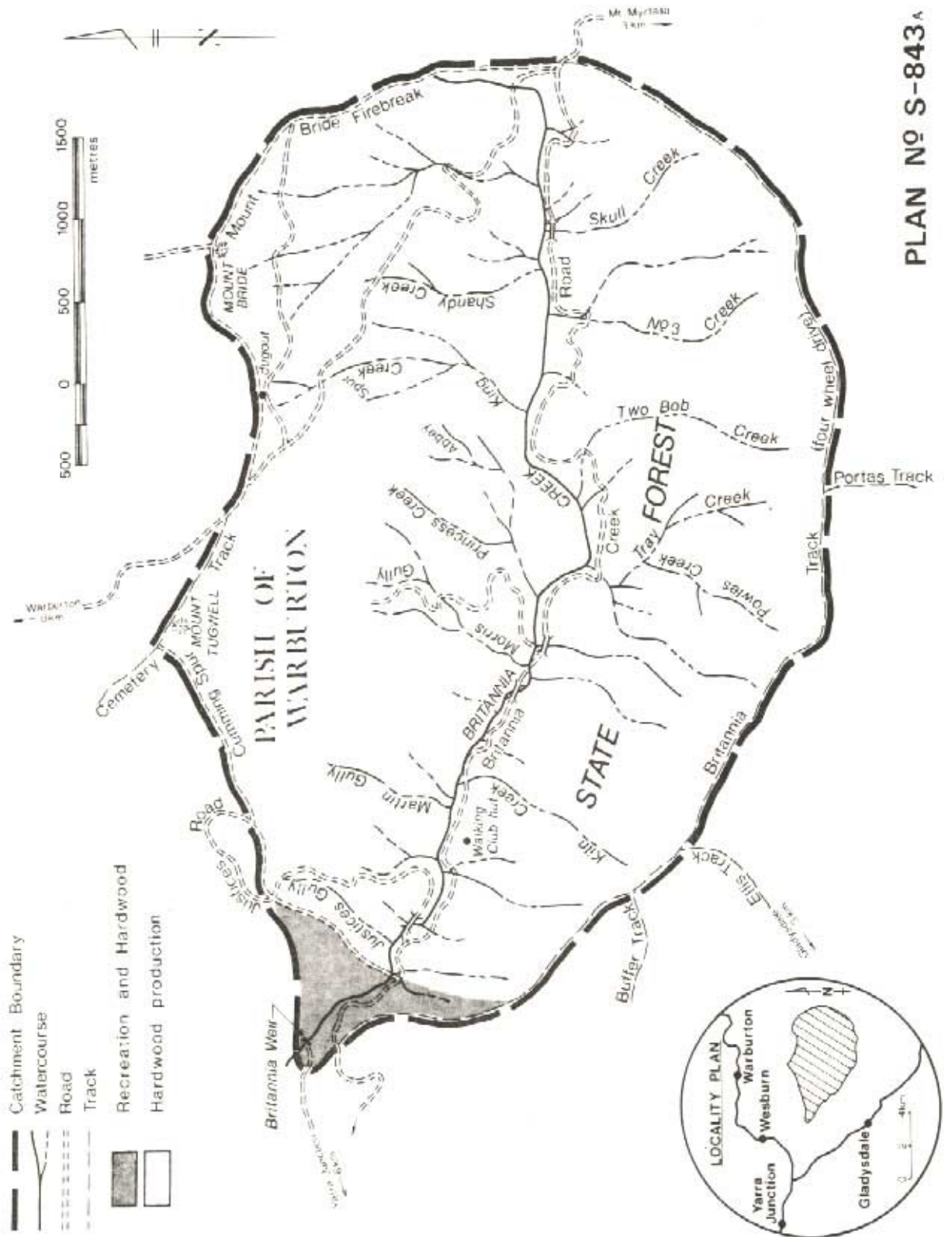
D82 Britannia Creek diversion, Yarra Junction Waterworks Trust.

That in the case of the above location (being within a catchment for which no land use determination has been made), the present tenure and management of public land continue for the time being and that once a land use determination has been made, the following areas:

- (i) the storage area

Figure 1 - Public Land

BRITANNIA CREEK CATCHMENT



PLAN NO S-843A

- (ii) diversion works
- (iii) associated facilities
- (iv) the buffer strips around diversion works and storage, as defined in the land use determination
- (v) any other allotments as specified below be used for
 - (a) water supply purposes
 - (b) other activities permitted by the water supply authority after consultation with the Soil Conservation Authority and the Environment Protection Authority

and that the area be permanently reserved under Section 4 of the *Crown Land (Reserves) Act 1978* for water supply purposes, and be managed by the water supply authority named.

Note: (1) The buffer should be wide enough to prevent direct pollution, to filter overland flow of water, and to control access. Its width will vary to suit differences in ground slope, soil type, vegetative cover, adjoining land use, and type of facilities available for treating the water.

(2) The primary object of management of the buffer must be to protect water quality. Subject to this principle the water supply authority may permit other secondary uses on the buffer. In such cases, the principles of management must be agreed upon by that authority and any other authorities concerned.

(3) In cases where the above recommendations cause the control and management of an area to pass to a land management authority from a water supply authority, which thus loses income, Council believes that the new management authority should pay adequate compensation or negotiate some other mutually acceptable arrangement.

HAZARDS TO WATER SUPPLY

In addition to water supply, the Britannia Creek catchment is used both for recreation and hardwood production. Each of these latter uses presents various hazards to water supply.

The current water quality problems are frequent high colour and turbidity levels and high bacteriological counts, which probably can be attributed to the following factors:

Recreational Activities

While the hazard of bushwalking is of little consequence, the use of four-wheel drive and trail bikes on steep off-road tracks represent a potentially serious hazard. Existence of eroded ruts and narrow gullies indicate the hazards caused by motorised recreation.

Timber Production

Forest operations for timber production are carried out by contractors under the supervision of Forest Commission officers in accordance with logging prescriptions. These operations seem to have little effect upon water quality. However, timber production activities of the early timber millers have placed two large sawdust piles on the edge of Britannia Creek and it is probable that, during periods of heavy rain, water passes through these mounds into the creek, causing discoloration of the water.

Roads

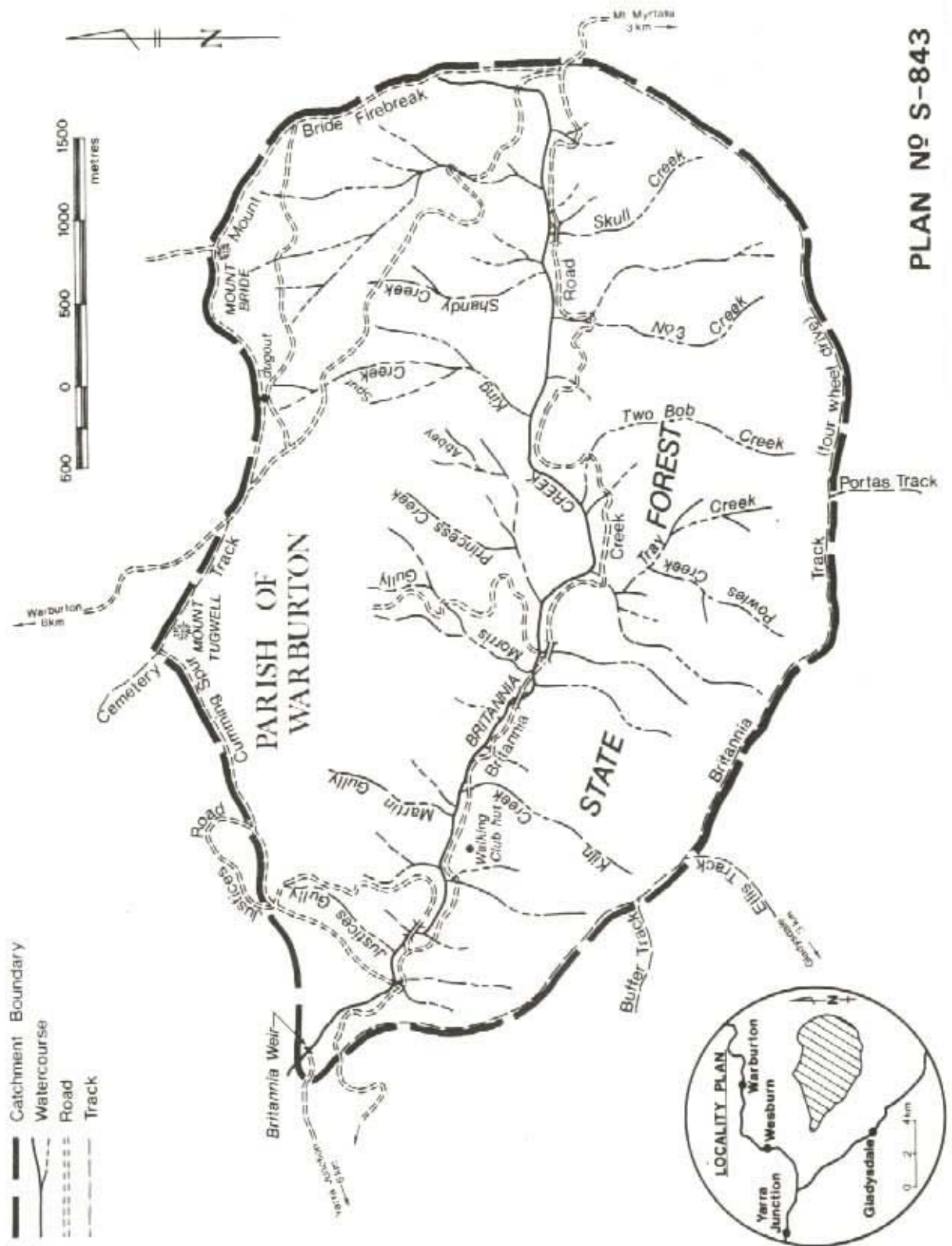
The condition of roads is of adequate standard for the use that is made of them. However, they are potential sources of turbidity and other pollution if overused or not properly maintained.

Wildlife

There is abundant wildlife in the catchment which may be partly responsible for the bacteriological pollution of the water.

Figure 2 - Catchment Plan

BRITANNIA CREEK CATCHMENT



RECOMMENDATIONS

1. That the Authority approves this report and forwards it to the Land Conservation Council for consideration.
2. That the Land Conservation Council recommends to the Governor-in-Council that the Britannia Creek Water Supply Catchment, as shown on Plan No. S-843 (Fig. 2), be proclaimed under Section 5(1)(b) of the *Land Conservation Act* 1970 and Section 22(1) of the *Soil Conservation and Land Utilization Act* 1958.