

**A REPORT ON THE
BAKERS GULLY (BRIGHT) CATCHMENT**

**A PROPOSAL FOR PROCLAMATION PREPARED
FOR CONSIDERATION BY THE LAND CONSERVATION
COUNCIL**

By

A. Arch
Conservation Officer
and RAM. McLennan
Catchments Investigation Officer

November 1978

SOIL CONSERVATION AUTHORITY
378 Cotham Road Kew Victoria 3101

CONTENTS

WATER SUPPLY SYSTEM.....	3
WATER QUALITY AND TREATMENT.....	4
OVENS RIVER AT PUMPSITE:	4
HIGHER RESERVOIR ON BAKERS GULLY:.....	4
LOWER RESERVOIR ON BAKERS GULLY:	4
RETICULATION.....	4
CATCHMENT DESCRIPTION.....	5
(A) GENERAL.....	5
(B) PHYSIOGRAPHY.....	5
(C) GEOLOGY.....	5
(D) SOILS.....	6
(E) VEGETATION.....	6
(F) CLIMATE.....	6
LAND USE AND LAND TENURE	7
PUBLIC LAND.....	7
FREEHOLD LAND	7
RECREATION.....	7
HAZARDS TO THE WATER SUPPLY.....	8
LAND CONSERVATION COUNCIL RECOMMENDATIONS FOR WATER PRODUCTION	8
RECOMMENDATIONS.....	9
MAP - PARISH OF POREPUNKAH AND PARISH OF BRIGHT - FIG 1.....	10
MAP - PARISH OF POREPUNKAH AND PARISH OF BRIGHT - PLAN No S-740	11

INTRODUCTION

The Land Conservation Council, in its Final Recommendations for the North-Eastern Study Area, Districts 3, 4 and 5, has recommended that the catchment should be investigated by the Soil Conservation Authority and if appropriate the catchment should be recommended for proclamation under Section 22(1) of the *Soil Conservation and Land Utilisation Act* 1958 and also under Section 5(1)(b) of the *Land Conservation Act* 1970.

The Bright Waterworks Trust is currently undergoing a major expansion program which will include a third and larger storage on Bakers Gully. This report is presented for consideration by the Land Conservation Council and is the result of an investigation by the Soil Conservation Authority. The report recommends that the Bakers Gully Water Supply catchment be proclaimed.

WATER SUPPLY SYSTEM

The Bright Waterworks Trust is authorised under its Act to supply water to the Bright Urban District, and this includes the Crown Township of Bright and surrounding areas, which combined is an area of about 715 ha.

Supply at present is drawn from two reservoirs in Bakers Gully (Plan 1). However, the creek in Bakers Gully ceases to flow for several months in normal years. The supply is supplemented during the dry periods by pumping from the Ovens River direct into the reticulation system.

The higher of the two reservoirs has a capacity of 13.6 ml, while the lower one has a capacity of 9.1 ML. These reservoirs are connected into the town reticulation system by a 250 mm main. The lower reservoir was constructed in 1900 and the higher one in 1912, with the present 250 mm supply main being installed in the 1950s, replacing the original 150 mm main.

The reservoirs have silted up significantly and become over-grown with vegetation since construction, particularly the higher one. This is attributed to the effects of forestry operations and perhaps more importantly the 1939 fires.

A pump reservoir of 200 ML capacity is planned for construction in the summer of 1979/80, pending State Rivers and Water Supply Commission grant allocations. It will be sited 1.3 km upstream from the higher of the two existing reservoirs, and will provide an additional 60 m of static head for the system.

The new reservoir will be connected into the town distribution system by a 300 mm supply main which will bypass the existing reservoirs. The existing reservoirs will be shut off from the town supply system and will be used only as an emergency supply.

The increased demand for water has been projected from the population figures below.

POPULATION OF BRIGHT URBAN DISTRICT						
Residences serviced	Fixed population	Average* floating population (tourists)	Effective population	Peak tourist population	Design population ⁺	Future residences to be serviced
800	1,500	3,700	5,200	8,000 plus	7,900	1,600

* Average floating population includes tourists and seasonal workers occupying flats, lodges, motels and caravan parks.

⁺ The design population is the population for which the expansion program is designed for and is based on a 25% increase in effective population.

WATER QUALITY AND TREATMENT

Bakers Gully is the best source of good quality water close to the town. The catchment is mainly forested Crown land and no houses exist in the catchment. The Bright Waterworks Trust monitors water quality monthly both at the offtake from the Bakers Gully reservoirs, the pump-site on the Ovens River, and from several points within the town reticulation scheme.

Ovens River at pumpsite:

The highest E. coli count was 300 on the 27th April, 1971, after continual recent rain. Other high counts occur after heavy rainfall especially after a dry period, e.g. 240 on 1st May, 1968, after 100 mm of rain. Out of 80 readings there have been no zero E. coli counts.

Higher Reservoir on Bakers Gully:

The highest E. coli counts were 470 on 20th December, 1977 (little rainfall), and 600 on 28th April, 1970 (145 mm - 21st April to 27th April, 1970). Out of 41 readings 6 have nil counts. These 6 satisfactory readings occurred after periods of little or no rain. The high E. coli counts are probably due to local contamination by bird and/or animal life.

Lower Reservoir on Bakers Gully:

The highest E. coli counts were 288 on 26th February, 1969 (50 mm previous week), 446 on 28th April, 1970 (145 mm previous week) and 280 on 16th December, 1975 (28 mm previous week). Out of 88 readings 4 have nil counts.

Reticulation

The highest E. coli counts from samples taken at two points of reticulation were 146 on 28th October, 1965, 200 on 26th February, 1969, and 336 on 28th April, 1970.

Out of 146 samples 58 had nil E. coli counts, the majority being in the past two years.

Although the water that is drawn from the Ovens River during the drier months is chlorinated there are still problems with the quality. These problems take the form of filamentous algae (*Anabaena* and *Volvox*) which, after chlorination, result in objectionable taste.

The Trust feels that it is not economic to install a full chlorination plant to the Bakers Gully scheme at the moment as the existing headworks and distribution system are completely inadequate for the town's requirements. The proposed new storage and distribution system will include a chlorination plant.

CATCHMENT DESCRIPTION

(a) General

The catchment area to the existing reservoirs is approximately 7.2 sq km and measures about 2 km wide by 3.5 km long, with the long axis lying north-south.

The catchment is just south of the Township of Bright in the Parish of Bright and lies almost completely within a Reserve for Water Supply Purposes of 7.76 sq km gazetted in 1875.

(b) Physiography

The catchment lies on the northern slopes of the Eastern Highlands at an elevation of from 366 to 1100 metres. It is hilly to mountainous terrain of Middle to Upper Ordovician sedimentary rocks which are less resistant to weathering than the Mt. Buffalo granite intrusion to the west. It is maturely dissected country with long, sharp ridges leading down from high points. The streams have a dendritic drainage pattern.

(c) Geology

Bakers Gully is situated on silty quartz sandstone and grey-wacke, argillaceous and sandy siltstone, shale and mudstone of Middle to Upper Ordovician age. The fresh rock is a grey colour whereas the weathered rock is yellow-brown or brown.

The sediments have been converted into low-grade metamorphics, especially changing shale to slate. Also the beds have been compressed into closely spaced meridional anticlines and synclines which provided a major structural control on quartz reef location and gold deposition in this area.

Minor hillwash deposits (colluvium) and stream alluvium are found mainly in the lower catchment area.

(d) Soils

Friable brown and red gradational soils are present on the Ordovician sediments which includes most of the catchment.

A typical profile of the former has a litter layer 5-10 cm thick overlying a dark-brown friable loam with strongly developed fine structure. With increasing depth the colour becomes paler as the influence of organic matter decreases, then usually more reddish or stronger brown. Textures change to clay loam or light clay.

A typical profile of the latter commences with about 6 cm of dark-brown loam over about 8 cm of yellowish red or reddish-brown loam to clay loam that merges with depth into the dark red or reddish-brown light clay. This soil is well structured at the surface but the rest is medium sub-angular blocky that breaks to very fine sub-angular blocky at the deeper levels.

Both these soils show moderate sheet erosion. Damage by fire, roading and logging can lead to changes in hydrological performance resulting in increased peak flows and stream turbidity.

On the colluvium and alluvium which is found mostly along the watercourses a number of different soils are found, due mainly to the varying texture and make-up of the parent material. Those present are red duplex soils, friable gradational soils, weakly bleached, red-brown and yellow gradational soils. They have low to moderate sheet and gully erosion hazard.

(e) Vegetation

Native vegetation remains in the upper half of the catchment (4.4 sq km) with the lower half being planted to softwoods (2.7 sq km) mainly prior to the 1939 fires.

The upper half of the catchment consists mainly of open forest with broad-leaf peppermint occurring mainly on the ridges associated with red stringybark, red box and long-leaf box. As elevation and rainfall increase, candlebark and brittle gum replace the red stringybark. The understorey is made up of shrubs, herbs and grasses.

The broad-leaf peppermint is typically replaced by narrow-leaf peppermint in the sheltered valley areas. Associated tree species are candlebark, manna gum and blue gum in the gullies and broad-leaf peppermint, brittle gum and red stringy-bark on the drier areas. Shrubs, grasses and herbs are found in the lower strata.

(f) Climate

The average annual rainfall for Bright is 1103 mm. the average rainfall per wet day is highest in the months of March, June and November. Precipitation is influenced by topography, and elevation with about 35% occurring in winter but less reliable than that in summer. High intensity storms are short and mainly occur in the summer.

The relation between altitude and minimum temperature is complex and influenced by local topography. Monthly maximum temperatures at Bright in summer are 31°C and 13°C in winter, while the monthly minimum temperatures in summer are 13°C and 2°C in winter.

The estimated growing season at Bright is 11 months but is restricted for 4 months over the winter period due to low temperature.

LAND USE AND LAND TENURE

Apart from 14 ha of freehold land in the lower catchment, the remaining land is publicly owned.

Public Land

In 1875 the Department of Crown Lands and Survey temporarily reserved 768 ha for water supply purposes and in 1893 this area was put under the temporary management of the Bright Waterworks Trust. In 1924 the Forest Commission was given permission to use the land for planting of pines. The Trust had no objection to this proposal at the time on the understanding that the Commission would cause no contamination of the water.

The most significant use of land within the catchment is softwood production which embraces 37% (274 ha) of the catchment to the existing reservoirs, but only 11% (51 ha) of the catchment to the proposed new reservoir.

The Forest Commission is aware of the potential problem which exists in the catchment during logging operations and in the more recent past has altered its proposed plans of operation at the request of the Trust in order to help protect the water quality.

“The final recommendations of the Land Conservation Council for the North Eastern Study Area Districts 3, 4 and 5 apply to the catchment as shown in Fig. 1.”

Freehold Land

Grazing occurs on 14 ha of freehold land at northern-most (lower) end of the catchment.

Recreation

There is constant recreational pressure on parts of the catchment due to the proximity of Bright township, particularly as it offers access to the popular Huggins and Clear Spot lookouts which offer superb views of Bright and the Ovens valley. There are also several sign-posted walking tracks through the softwood section of the catchment.

HAZARDS TO THE WATER SUPPLY

The erosion hazard in the catchment consists of potential moderate sheet erosion on the slopes. Softwood extraction and roading accentuate this hazard.

The other hazard which causes concern is the possibility of pathogens entering the water supply due to the relative ease with which people and domestic and wild animals can gain access to the storage reservoirs.

LAND CONSERVATION COUNCIL RECOMMENDATIONS FOR WATER PRODUCTION

The final recommendations for North Eastern Study Area Districts 3, 4 and 5 state...."that all domestic water supply catchments within the study districts should be investigated by the Soil Conservation Authority and, where appropriate, recommended for proclamation by the Land Conservation Council, in order to ensure a uniform procedure for land use planning within these area".

The report states further "that in the case of locations listed below and shown on the maps (all these locations being within catchments for which no land use determinations have 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 area:

- (i) the storage areas
- (ii) diversion works
- (iii) associated facilities
- (iv) buffer strips around diversion works and storages, 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

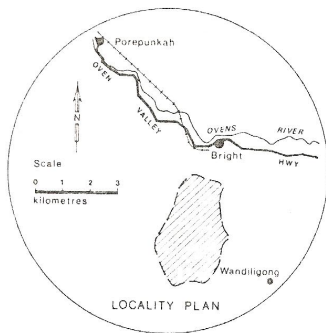
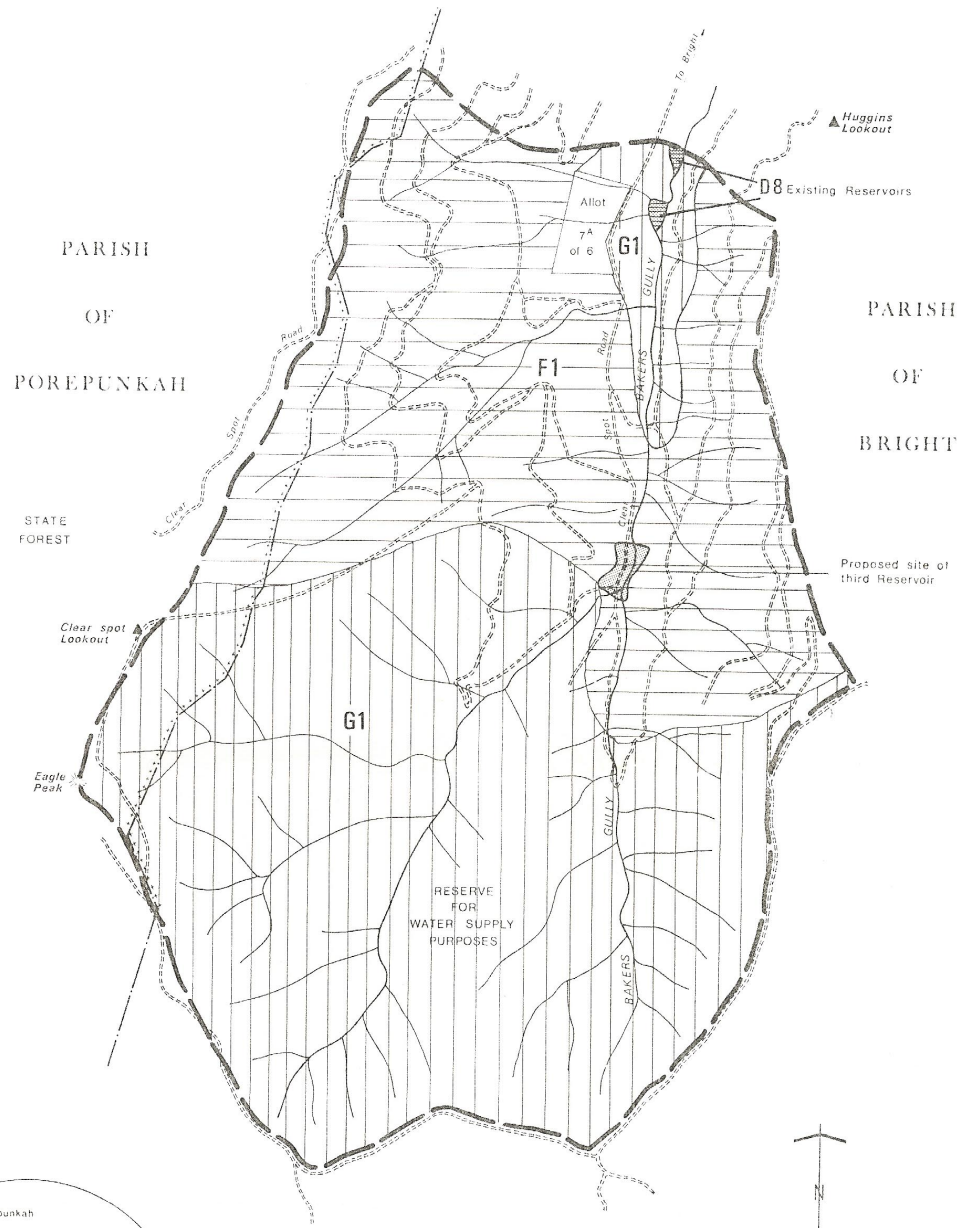
and that these areas be permanently reserved under Section 14 of the "Land Act 1958" for water supply purposes, and be managed by the water supply authority named".

D 8 Baker Creek, Bright Waterworks Trust.

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 Bakers Gully (Bright) Water Supply Catchment, as shown on plan S-740, be proclaimed under Section 5(1)(b) of the Land Conservation Act 1970 and Section 22(1) of the Soil Conservation and Land Utilisation Act 1958.

MAP - PARISH OF POREPUNKAH AND PARISH OF BRIGHT - Fig 1.



LEGEND

Final Recommendations North-Eastern Study Area. Districts 3, 4 & 5.

-  D8 Bakers Gully. Bright Waterworks Trust
-  F1 Softwood Production (existing)
-  G1 Forest Area

MAP - PARISH OF POREPUNKAH AND PARISH OF BRIGHT - Plan No S-740

