

A REPORT ON THE
TENNENT CREEK (CANDOWIE RESERVOIR)
CATCHMENT

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

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TABLE OF CONTENTS

INTRODUCTION	3
SUPPLY SYSTEM.....	3
WATER QUALITY AND TREATMENT	3
THE CATCHMENT	3
(A) GENERAL.....	3
(B) GEOLOGY AND TOPOGRAPHY	4
(C) CLIMATE	4
(D) SOIL AND VEGETATION	4
LAND USE AND LAND TENURE	4
HAZARDS TO WATER SUPPLY	5
LAND CONSERVATION COUNCIL RECOMMENDATION FOR WATER PRODUCTION.....	5
RECOMMENDATIONS	5

INTRODUCTION

The Land Conservation Council recommended in the final recommendations for the Melbourne Study Area, that the catchment to the Tennent Creek Reservoir be investigated by the Soil Conservation Authority and if appropriate recommended for proclamation.

This report is presented for consideration by the Land Conservation Council and is the result of such an investigation. The report recommends the proclamation of the catchment to Tennent Creek Reservoir.

SUPPLY SYSTEM

Westernport Waterworks Trust, derives its water from the Tennent Creek Reservoir (Candowie) situated in Allotment 150 in the Parish of Corrinella, Shire of Bass. Water is pumped to the Almurta service basin which is located about 1 km west of the reservoir and outside the actual catchment area. From this basin the water flows by pipeline to a service basin in San Remo. The water is then piped across the San Remo bridge to Cowes. The main pipeline from Candowie reservoir to Cowes covers a distance of about 37 km.

Along its route the system supplies water to Corrinella, Bass, Woolamai Estate, Archies Creek butter factory, Kilkundra, Dalystan on the mainland and Newhaven, Rhyll, Surfbeach, Sanderland, Bay Estate, Ventnor, Cowes on the Phillip Island.

The number of connections at present amounts to 5,000 plus 260 tapplings along the pipeline to farmers for domestic and stock requirements. There are proposals to extend the supply to Koala Estate, to Coronet Bay and to increase the number of supplies in Cowes, which would add a further 1240 connections.

The full capacity of the reservoir is 2,270 ML with a detention time of 8 to 10 months. However, the streams supplying the reservoir are seasonal and dry during December to March and in some years even during April.

During the summer period there is a large increase in the population of Phillip Island due to holiday makers. For several years shortages have occurred. This has resulted in restrictions being placed on the use of water.

WATER QUALITY AND TREATMENT

State Rivers and Water Supply Commission monitors water quality at various strategic points in the Candowie reservoir and in the supply system.

According to the data received most of the physical and chemical water quality parameters meet the standards recommended by the WHO and Australian cities. The bacteriological counts of total Coliform and faecal Coliform, however, are at such high levels due to the presence of large numbers of dairy cattle in the catchment that the raw water of this reservoir warrants disinfection. Chlorination to destroy pathogens and screening to remove coarse material such as leaves, etc., is carried out by the Westernport Waterworks Trust.

THE CATCHMENT

(a) General

The catchment supplying Candowie reservoir covers approximately 19.3 km². It is located in West Gippsland at 38° 32 latitude south and 145° 36 longitude east. The reservoir is in the north-west corner of the catchment on the south side of the road from Almurta to Glen Alvie.

There are no major localities within the catchment area, but several small villages such as Almurta, Glen Forbes and Glen Alvie are situated around the boundary of the catchment. The nearest major town is Wonthaggi which is some 20 km south of the catchment. The elevation of the catchment ranges from 60 m at the reservoir to 255 m at its highest point.

The catchment is about 90 km east of Melbourne within the Melbourne Study Area of the Land Conservation Council.

(b) *Geology and Topography*

The Tennent Creek catchment is situated between the Almurta fault in the north-west and the Krowera-Blackwood forest divide in the south. The streams emerge from the higher country in the east and south-west. A group of small streams run towards the north-west and another group runs northwards into the reservoir.

Geologically the catchment area is occupied by rocks of the Strzelecki Group. These rocks are of Cretaceous age. The catchment is situated on an uplifted and tilted block which has been deeply dissected by streams. The streams have formed V shape valley's and the divides are moderately flat. The bedrock consists of sandstone, mudstone, siltstone, conglomerate and occasional black coal. These types of rocks are susceptible to landslides.

(c) *Climate*

The mean annual rainfall at Almurta, the nearest rainfall station, is 1,027 mm (based on 31 years of record).

February is the driest and probably the hottest month of the year with an average rainfall of 50 mm followed by January with 56 mm.

An average maximum temperature of 25°C can be expected either in February or January. The winter average maxima range between 10 - 12°C. The minimum temperatures appear mostly in July and are often under 5°C over most of the catchment.

Growing season in this area is relatively long and approximately about 10 months. The growth is retarded during June and July due to low temperatures.

(d) *Soil and Vegetation*

Soils in the catchment have developed from cretaceous sediments. The majority of the soils can be described as shallow mottled yellow gradational with an average depth of 0.4 m but deeper on gentle crests and slopes. The soils have a clay loam surface texture with a high permeability. Soils on terraces and flood plains have developed from older and recent alluvial deposits which have a mottled yellow deep duplex profile with moderate permeability.

Soils derived from cretaceous parent material are subject to land slides and some land slides are evident in the catchment. More on this will be included in the land use determination report.

The whole catchment was cleared for agricultural use around the turn of the century, and very little original vegetation remains. Pine and cypress trees have been extensively introduced throughout the catchment forming windbreaks for stock and farm house protection.

Pastures usually consist of introduced species such as perennial rye grass, white clover, subterranean clover and cocksfoot.

LAND USE AND LAND TENURE

The storage area and a buffer of approximately 20 m width surrounding the reservoir are public land. The remainder is in freehold ownership. Currently the majority of the catchment is grazed by dairy and beef cattle roughly in equal proportion. Very few sheep are kept in the catchment.

Hard surfaced areas include farm house, stock yards, milking sheds and access roads.

A small proportion of some properties is used for cropping. There are currently no instances of cropping which would be in conflict with the water supply catchment requirements.

The average size of holdings range from 40 to about 250 ha. It appears that at the present time there is a tendency towards the amalgamation of small farms to create larger holdings rather than for subdivision to occur.

HAZARDS TO WATER SUPPLY

Soils developed on cretaceous parent rocks are unstable and subject to land slides. Clearing of original forest has aggravated this situation. Though some land slides were observed in this catchment they don't appear to constitute a serious hazard to the water supply.

Unsealed roads on the north and north-west side of the catchment, not far from the reservoir, are a source of siltation to the reservoir.

When the water level of reservoir is high, it comes very close to the edge of an unsealed road on its north-west side and is a potential source of pollution.

Cattle have access to all stream lines and drinking points on streams become highly erodible due to loss of vegetation.

LAND CONSERVATION COUNCIL RECOMMENDATION FOR WATER PRODUCTION

The final recommendations for the Melbourne Study Area state "that all domestic water supply catchments within the study area 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 areas".

The report states further "that in the case of the locations listed below and shown on the maps (all these locations being within catchment 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 areas:

- (i) the storage areas
- (ii) diversion works
- (iii) associated facilities
- (iv) the 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.

Note: (i) 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".

D 87 Tennent Creek reservoir, Westernport Waterworks Trust

The area recommended for proclamation includes the catchment of the Tennent Creek (Candowie) reservoir.

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 Tennent Creek (Candowie) Reservoir Water Supply Catchment, as shown on plan S-738, 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.

