

**A REPORT ON THE EVANSFORD AND
TALBOT RESERVOIRS WATER SUPPLY
CATCHMENT (McCALLUM CREEK WATER
SUPPLY CATCHMENT)**

A PROPOSAL FOR PROCLAMATION

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Introduction

McCallum Creek water supply catchment is situated about 25 km south-west of Maryborough within the Ballarat Study area and the North Central Study area of the Land Conservation Council as shown on the attached proclamation map. In its final Recommendations the LCC has recommended that his catchment be investigated for proclamation.

There are three water supply authorities that derive all or part of their water requirements from McCallum Creek and its tributaries: the Maryborough Waterworks Trust, the Shire of Tullaroop Waterworks Trust and the Shire of Talbot and Clunes Local Governing Body. The Maryborough and shire of Tullaroop Waterworks Trusts receive water from Evansford reservoir and the shire of Talbot and Clunes Local Governing Body receives water from Talbot reservoir. In this report the natural features of the catchment, land use, and water quality are briefly described and the proclamation of the catchment is recommended.

The Catchment

The total catchment area is approximately 18,762 ha. Of this, 1474 ha are the catchment to Talbot reservoir, which is fed by Stony Creek. A channel interconnects Talbot reservoir to McCallum Creek. The remaining 17,288 ha are the catchment to Evansford reservoir fed by McCallum Creek.

There are two small localities in the catchment, namely Waubra and Evansford as shown on the catchment plan. There are also a number of farm houses distributed throughout the catchment. Apart from a small forested area near Mt. Beckworth, the whole catchment has been cleared.

Land Tenure and Land Use

The site occupied by the two reservoirs are public land. The LCC has recommended that these sites be used for water supply purposes. D6, Final Recommendations, North Central Area, February, 1981 and D7, Final Recommendations Ballarat Area May 1982. Evansford reservoir, together with its margin, covers an area of just over 30 ha as parts of CA21 and 22 in the parish of Caralulup and parts of CA57 in the Parish of Beckworth and is owned and managed by the Maryborough Waterworks Trust.

Talbot reservoir and its surrounding zone cover an area of 80 ha in the Parish of Caralulup, and is a water supply reserve managed by the Shire of Talbot and Clunes as local governing body under the Water Act.

The sites of the above reservoirs, roads and road reserves are public land. The remaining land in the catchment is freehold and used for agricultural purposes. Grazing by sheep and cattle is the predominant land use occupying about 80% of the freehold land. The remaining 20% is used for cropping; mainly potatoes and some oats.

Geology, Topography and Soils

The bedrock over most of the catchment is Ordovician, intruded by granitic rocks and overlain by large areas of basalt. During the late Tertiary and early Quaternary, the so-called newer Volcanics, which cover most of the catchment and consist of basalt, tuffs and scoria, were extruded. Flood plains and low level terraces were deposited with recent Alluvium and Quaternary deposits which consist of sand, silt, clay and gravel.

There are two main topographic features in the catchment, the first being the granitic hills and volcanic cones reaching an elevation of up to 600 m above sea level at Mt. Bolton, Quoin Hill and Cardinal hill; and the second, the gentle and undulating plains dropping to 340 m above sea level at Talbot reservoir. The streams emerge from the south and flow northwards.

Approximately 70% of the catchment area has soils developed from basaltic parent material and 20% developed from granitic material. Soils developed on Ordovician parent rocks and on various kinds of alluvium cover the rest of the catchment area. Table 1 shows different soil groups found in the catchment area.

Climate

There are no climatic data available from within the catchment area. The data from Clunes weather station are used to indicate the climatic conditions of the catchment area, as it is the nearest to the catchment.

There is a fairly even distribution of rainfall during the year, the mean yearly total being 585 mm. The temperatures in this area are moderate with a mean maximum of 27.6°C occurring during February and average minimum of 2.4°C during August. The growing season is on average between 7-9 months.

Vegetation

Most of the catchment area has been cleared of its original vegetation which has been replaced by agricultural plants, mainly pasture species. Only a small area of open forest near Mt. Bolton has not been cleared. In this area, manna gum (*E. viminalis*) on steep slopes, yellow box (*E. melliodora*), on gentle slopes and swamp gum (*E. ovata*) are the major species.

The species remaining in isolated locations, red box (*E. polyanthemos*), red ironbark (*E. sideroxylon*), grey box (*E. microcarpa*), yellow gum (*E. leucoxylon*) and river red gum (*E. camaldulensis*), were the major tree species of original woodland structure.

Water Supply Systems

Evansford Reservoir

This reservoir is fed by the main artery of McCallum Creek and it supplies two thirds of the annual water requirements of the Maryborough Waterworks Trust. The rest of the water supply is pumped from Tuyllaroop reservoir.

From Evansford reservoir, the water runs by gravity, via a water main, 23.4 km to Centenary basin just outside Maryborough. From this basin the water flows through a treatment plant to the city of Maryborough and in addition, bulk water supply is provided to the shire of Tullaroop Waterworks trust for distribution of Timor/Bowenvale, Adelaide Lead, Bet Bet, Alma, Possum Gully, Dooley's Lane and additional tapping to farms in the area,

Evansford has a capacity of 1, 386 ML and a detention time of over 100 days. Its holding capacity may be augmented by raising the dam, however, the pipelines from Evansford so not have the capacity to carry this additional quantity.

Talbot Reservoir

The capacity of Talbot reservoir is approximately 850 ML. The annual water consumption is about 66 ML and the reservoir has an estimated detention time of 6-8 years.

The reservoir is fed by Stony Creek, and via a channel from McCallum Creek, and supplies the township of Talbot. The water supply gravitates to the town, initially through a 200 mm and then a 150 mm diameter pipeline, and the reticulated supply is regulated by a pressure-reducing valve in the pipeline. There is therefore no need for a service basin.

There are 150 water connection in Talbot, and in addition water is supplied to a few farm houses and domestic animal troughs. Talbot reservoir is open to the public for fishing.

Water Quality and Treatment

Table 2 shows a summary of water quality data from both Evansford and Talbot reservoirs. The bacteriological counts are high in Evansford reservoir, however, in Talbot reservoir, possibly due to the long detention, the counts of coliforms and E. coli are comparatively low. The water from Evansford reservoir is now fully treated before entering Maryborough reticulation system, but no treatment is applied to the water from Talbot reservoir.

Hazards to the Water Supplies

High bacteriological counts and high colour are currently the main water quality problems of both Evansford and Talbot reservoirs. The possible sources of contamination are:

1. Access of cattle and sheep to streams and to Talbot reservoir.
2. Public access to Talbot reservoir for fishing.
3. Concentration of water birds at both reservoirs as they are the only water bodies in the district.
4. Run-off from grazing, cropping and fallow land in the catchment.
5. Run-off from roads, particularly from unsealed roads and farm tracks.

Recommendation

That the Land Conservation Council recommends to the Governor-in-Council that the catchment to Evansford and Talbot reservoirs, as shown on catchment plan S1138, be proclaimed under the provisions of section 22(1) of the Soil conservation and Land Utilisation Act 1958.

TABLE 1. SOILS GROUPS IN THE CATCHMENT AREA

PARENT MATERIAL	SOIL GROUP	SURFACE TEXTURE	PERMEABILITY	(AV. DEPTH (m))	TOPOGRAPHIC POSITION
Lower Palaeozoic interbedded slate, shales and sandstone steeply dipping with quartz reef. Alluvium from low Palaeozoic sediments	Shallow stony gradational soil	Stony loam	Moderate	0.2	Sharp crests
	Red sodic duplex soil	Gravelly loam	Moderate	0.4	Gentle crests
	Red sodic duplex soil coarse structure	Gravelly loam	Low	1.5	Upper slopes
	Yellow sodic duplex soil coarse structure	Gravelly loam	Very low	>2.0	Low slopes
	Yellow sodic duplex soil	Clay loam	Moderate	>2.0	Swales
Devonian granite	Coarse sandy soil uniform texture	Coarse sandy loam	High	0.5	Steep slopes
	Mottled duplex soil with ironstone	Coarse sandy loam	Low	1.5	Hills, outwash fans and foot slopes
Granitic rock	Coarse sandy soil uniform texture	Gravelly coarse sandy loam	High	0.5	Steep slopes
	Mottled duplex soil with ironstone	Gravelly coarse sandy loam	Low	2.0	Gentle slopes
	Coarse sandy soil uniform texture	Gravelly coarse sandy loam	Low	>2.0	Foot slope
Tertiary basalt	Red gradational soil fine structure	Clay loam	Moderate	1.0-1.5	Cones and rises
	Yellow sodic duplex soil coarse structure	Loam	Very low	2.0	Long slopes

PARENT MATERIAL	SOIL GROUP	SURFACE TEXTURE	PERMEABILITY	(AV. DEPTH (m))	TOPOGRAPHIC POSITION
Alluvium from basalt	Red brown stony shallow gradational soil	Clay loam	Moderate	0.8	Scarps
	Yellow brown calcareous sodic duplex soil	Loam	Very low	>2.0	Long slopes
	Black cracking clay soil uniform texture	Clay	Very low	>2.0	Creek flats
Quaternary basalt	Stony red gradational soil fine structure	Loam	High	1.0	Steeper crests
	Red gradation soil fine structure	Clay loam	Moderate	>2.0	Gentle hills
	Yellow sodic duplex soil coarse structure	Loam	Very low	>2.0	Low gentle slopes
Quaternary alluvium	Calcareous sodic clay soil uniform texture	Clay	Very low	>2.0	High terrace
	Red sodic duplex soil	Sandy loam	Low	>2.0	Middle terrace
	Red duplex soil	Sandy loam	Moderate	>2.0	Low terrace
	Variable grey soil	Variable	Variable	>2.0	Low flood plain

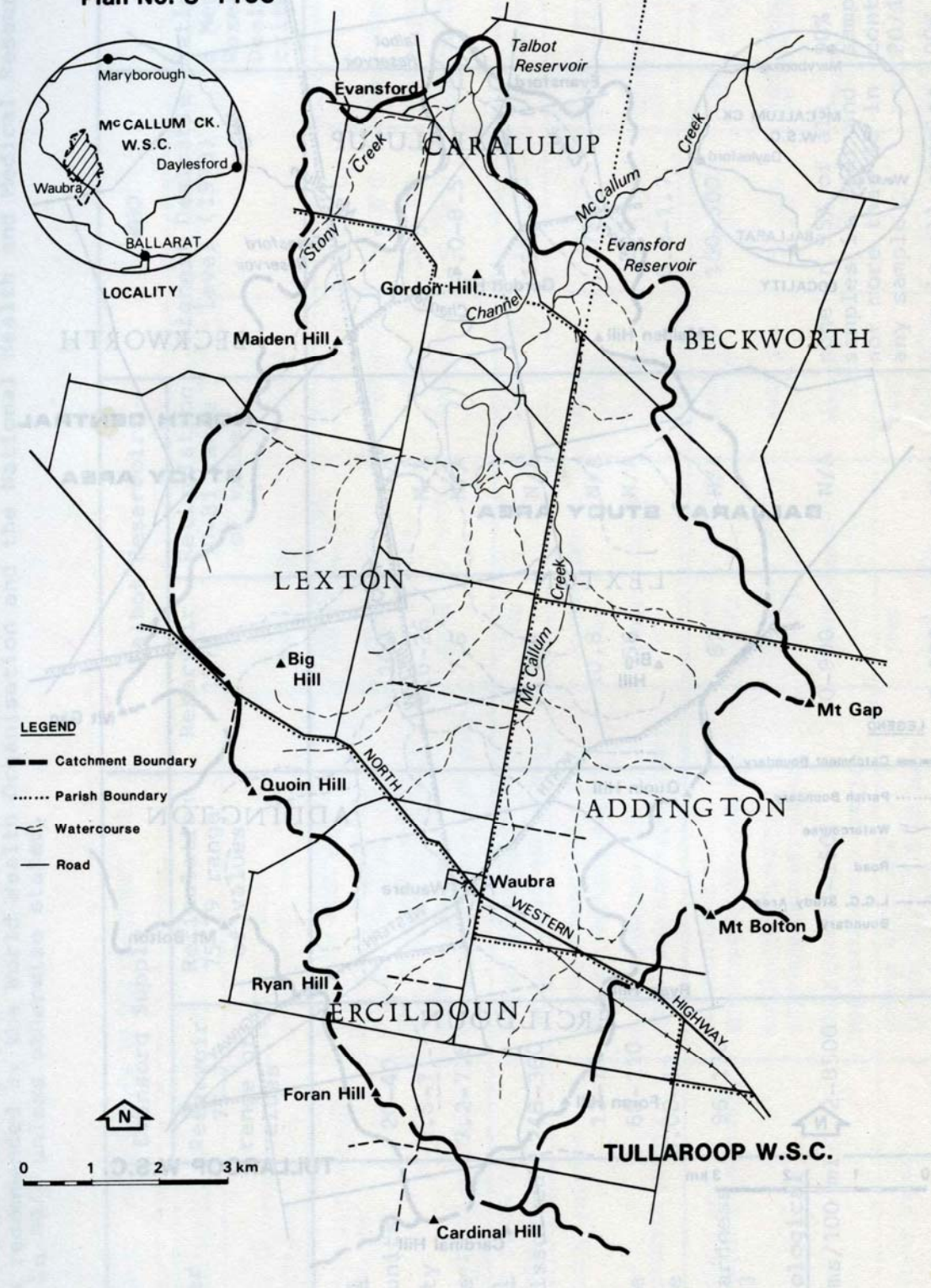
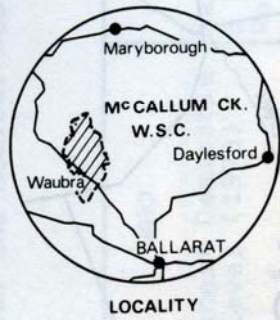
TABLE 2

Summary of Water Quality Data for Evansford and Talbot Reservoirs before treatment and water quality objectives recommended by the World Health Organisation and the National Health and Medical Research council. In mg/1 unless otherwise stated.

Parameter	Evansford Supply		Talbot Reservoir		WHO Highest Desirable Level (1973)	National Health & Medical Research Council Desirable current criteria (1980)
	Reservoir 75-79 range of values	Reticulation 75-79 range of values	Reservoir 1974	Reticulation 70-81 range of values		
Physical						
Colour units	20-40		100	N/A*	5	50
Turbidity	1.6-7		6.6-26	N/A	5	25
pH range	7.2-7.6		7.6	N/A	7.0-8.5	6.5-9.2
Chemical						
Total dissolved solids	248-360		184	N/A	1500	1500
Calcium	12-14		10.8	N/A	75	200
Chloride	68-110		56	N/A	200	600
Fluoride	0.08-12				0.8-1.7	1.5
Total hardness as CaCo3	96.130		62	N/A	100-500	600
Microbiological						
Coliforms/100 ml	2-8500	4-150	0-900	N/A	none in 95% of all samples in year and not more than 10 in any sample	90% of all yearly samples should contain less than 20-100 ml
E Coli/100 ml	0-160	0-4	0-230	N/A	zero in all samples	90% of all yearly samples should contain less than 2/100 ml

McCALLUM CREEK WATER SUPPLY CATCHMENT

Plan No. S-1138



- LEGEND**
- Catchment Boundary
 - Parish Boundary
 - ~ Watercourse
 - Road

