LEARMONTH, SKIPTON, STREATHAM MININERA, MORTLAKE, DUNKELD

WATER SUPPLY CATCHMENTS

A Proposal for Proclamation

Learmonth Borefield (Learmonth)
St. Enoch's Spring (Skipton)
Streatham and Mininera Borefield (Streatham, Mininera)
Mortlake Spring Mortlake)
Serra Rang Tributaries and Borefield (Dunkeld)

Statement prepared for consideration by the
Land Conservation Council

May 1991

Natural Resource Systems Division
Department of Conservation and Environment

WESTERN DISTRICT GROUNDWATER INVESTIGATIONS

The accelerated proclamation program identified as a high priority a number of groundwater sources used for urban water supply that should be investigated for proclamation as water supply catchments. Groundwater provides all or part of the requirements for the townships of Skipton, Learmonth, Mininera, Streatham, Mortlake and Dunkeld all of which are localities within the Western District of Victoria.

Investigation of these groundwater supplies included discussion and consultation with the groundwater section of the Rural Water Commission (RWC) in regard to the likely extent of the recharge area to these bores and springs. The Borefields Investigation section of RWC was asked to provide input without conducting a detailed hydrogeological study into determining the impact of direct infiltration on groundwater quality and a zone around each offtake which was considered important for direct infiltration and groundwater protection.

The definition of the groundwater recharge areas is unclear because insufficient detail of a hydrogeological nature is available for the evaluation. The limited data available (bore logs, soils/geology) has been evaluated and interpreted so as to delineate an area around each bore or spring considered to make the most significant contribution to recharge. This area is generally circular, except when the topographic catchment is considered to exert an influence.

Typically the recharge areas occur on broad flat to undulating basalt plains with extinct volcanic cones occurring sporadically throughout. Where the volcanic cones are scoriaceous and hence highly permeable they may form important areas of local recharge. The soils of the basalt plains vary from deep friable red gradational soils around Learmonth and Skipton to yellow-brown duplex soils further west around Streatham, Mininera and Dunkeld. Black cracking clays are found on basalt alluvium. The recharge areas mostly support pasture or are cropped. Remnant indigenous vegetation occurs intermittently along watercourses, the dominant tree species being River Red Gum (*Eucalyptus camaldulensis*).

The recharge zones are predominantly freehold land used for a wide range of agricultural and rural residential activities.

The Land Conservation Council recommendations for the use of the small areas of public land are contained in "Final Recommendations, Ballarat Study Area", LCC, 1982, and "Final Recommendations, Southwestern Study Area, District 2," LCC 1982.

ST. ENOCH'S SPRINGS (SKIPTON)
WATER SUPPLY CATCHMENT

St. Enoch's spring is located 9 km northwest of Skipton. The spring forms the headwaters of Broken Creek a tributary of Mount Emu Creek in the Hopkins Rivers Basin. The springs feed directly into a reservoir located within a water reserve Section A Parish of Enuc.

The Catchment

The immediate catchment to the reservoir is relatively small the topography of which is undulating low basalt hills. A reservoir protection drain collects run-off, normally reaching the reservoir from the surface catchment, and discharges out of the catchment. The recharge area to the spring is considered to comprise the surface catchment area and an area of 2.5 km radium encompassing the scoria cone to the north which include Black Lake.

Elevation/Rainfall

Skipton	289 m	632 mm
Beaufort	387 m	689 mm

Land Use and Tenure

The catchment (7854 ha) is predominantly private land. Public land in the catchment includes the reservoir area (D24) and Black Lake (c5). The major use of private land is sheep grazing. The numbers in brackets refer to the relevant LCC Recommendation for the Ballarat Study Area.

Water Supply System

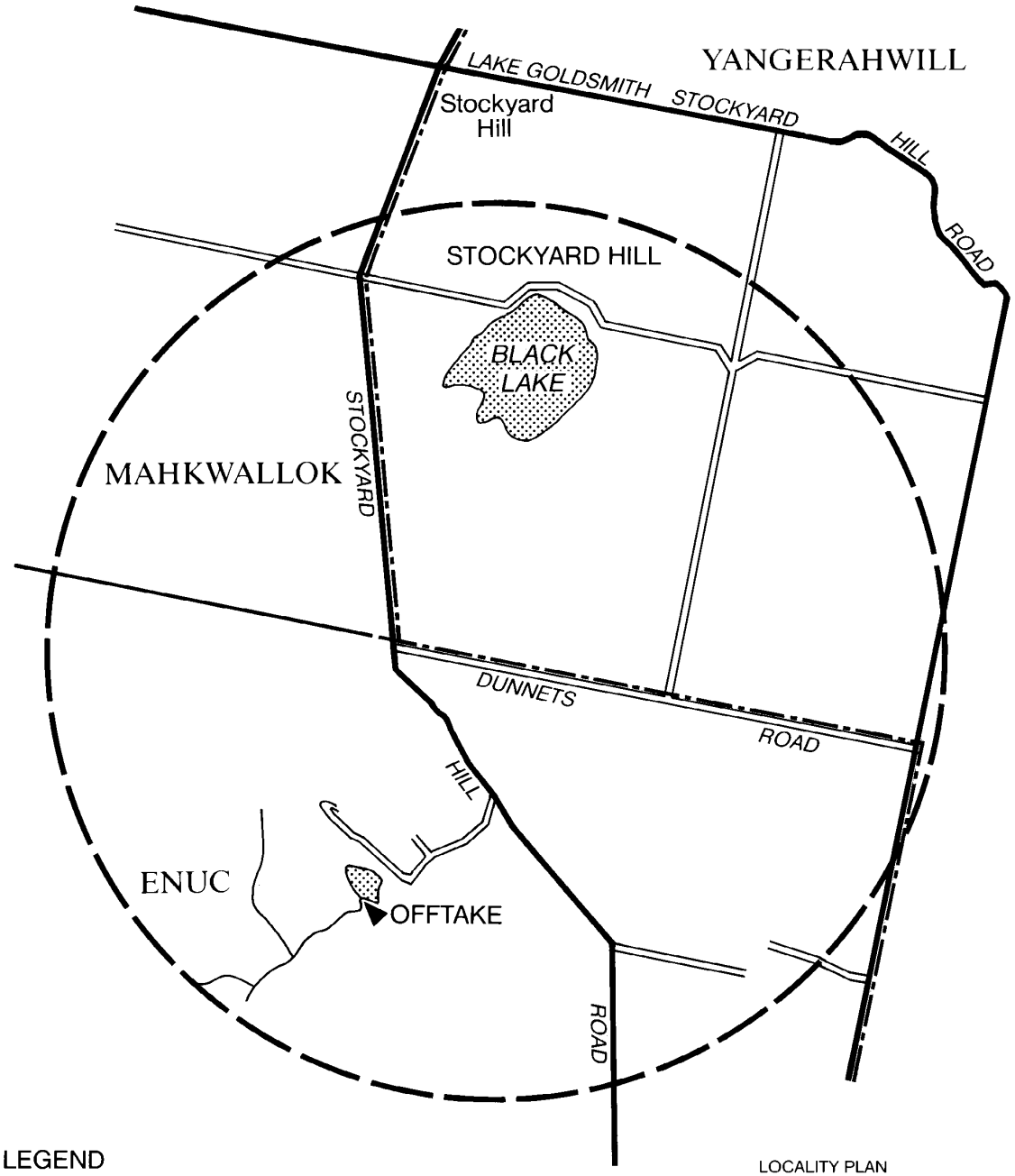
St. Enoch's spring discharges to a reservoir (59 ML). A pump boosted gravity fed pipeline supply to a storage tank (1.5 ML) and an elevated storage (123 KL) for distribution to Skipton (population 500). The reservoir is subject to severe algal problems and this is considered to be stimulated by high nutrient levels. Supply is not treated. The responsible water supply authority is the Ballarat Water Board.

Administrative Areas

Parishes:	Enuc, Yangerahwill, Mahkwallok
Municipality:	Shire of Ripon

PLAN NO. S-1510

ST. ENOCHS SPRING
WATER SUPPLY CATCHMENT



LEGEND

- Catchment Boundary
- Parish Boundary
- ENUC Parish Name
- Sealed Road
- Unsealed Road

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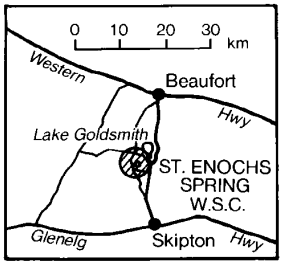
0 500 1000 m

G/6144

LOCALITY PLAN



LEARMONTH BOREFIELD
WATER SUPPLY CATCHMENT

The Western Victorian township of Learmonth (population 300) is situated on the northern shore of Lake Learmonth, 10 km northwest of Ballarat. Learmonth obtains its water supply from two groundwater bores, situated on water reserves. The main supply is obtained from a bore to the north of the town on Bankin Hill adjacent to Ca 4 Section F Township of Learmonth. A supplementary bore is located southwest of Bankin Hill adjacent to CA 30 Parish of Burrumbeet.

The Catchment

The bores are located and draw from a depth that suggests groundwater is contained within the basalt aquifer. Recharge to this aquifer is considered to be localised and likely to result from vertical infiltration with some input from Lake Learmonth. It is therefore considered that protection of this recharge zone is best served by proclamation of the area within 5 km radius of the bores.

Extinct volcanic cones occur in the catchment, these include Weatherboard Hill (545 m), Coghills Hill (505 m), Brown Hill (490 m) and Bankin Hill (465 m).

Part of this intake is included in the already proclaimed Tullaroop Reservoir Catchment (Victoria Government Gazette, No. 42, 4 June 1980). Readers are referred to a report* published in March for greater detail.

Rainfall/Elevation

Wendouree	633 mm	460 m

Land Use and Tenure

The Learmonth borefield (5408 ha) is predominantly private land (95%), used for mixed grazing, dryland dairying, cropping and rural residential development. Public land includes Lake Learmonth (M5), the Learmonth bores (D30) and Brown Hill scenic reserve (P2). The numbers in brackets refer to the relevant LCC Recommendation for the Ballarat Study Area.

Water Supply System

Water from the main bore is pumped to a service basin (455 KL) for distribution to Learmonth where it is used for all domestic purposes. The groundwater is of good chemical and physical quality but can occasionally display high levels of Coliform bacteria. The supply is not treated. The responsible water supply authority is the Learmonth Water Board.

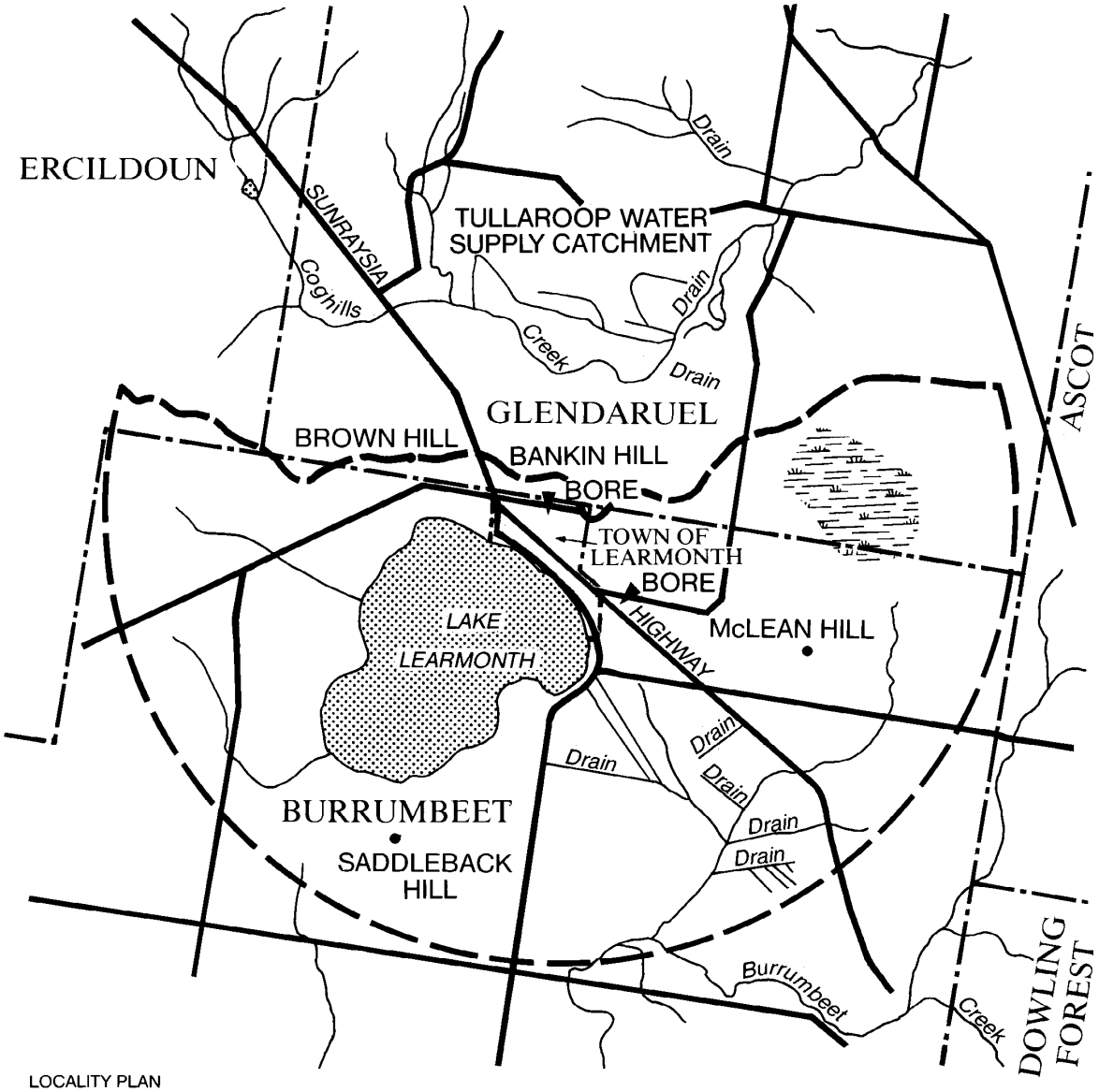
Administrative Areas

Parishes:	Glendaruel, Burrumbeet, Ercildoun
Municipality:	Shire of Ballarat

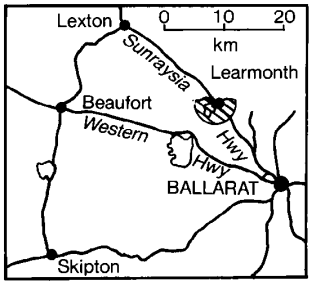
* "A report on the Tullaroop Reservoir Catchment", Soil Conservation Authority, March 1980

PLAN NO. S-1511

LEARMONTH BOREFIELD WATER SUPPLY CATCHMENT



LOCALITY PLAN



G/6169

LEGEND

- Catchment Boundary
- Parish Boundary
- ASCOT Parish Name
- Sealed Road

STREATHAM AND MININERA BOREFIELDS
WATER SUPPLY CATCHMENTS

The townships of Streatham and Mininera use water from borefields as part of their domestic supply. The main bore for Streatham is located on a water reserve adjacent to CA 4 Section 1 Township of Streatham and the supplementary bore is located on a road reserve adjacent to CA 40D Section 2 Township of Streatham. The bore for Mininera is located in the sports reserve, Township of Mininera.

The Catchment

It is considered that the most significant component to groundwater recharge within the borefields is contributed by vertical infiltration within a radius of 4 km of the bores. The catchments (each of 5027 ha) have therefore been defined as such. These areas are subject to periodic inundation.

Elevation/Rainfall

Streatham	210 m	575 mm
Westmere	238 m	536 mm

Land Use and Tenure

The Streatham and Mininera borefield catchments are predominantly private land (95%), public land includes small river frontage reserves (J1, J15), a water reserve (D53) and the Mininera sports ground (T1). Private land in both catchments is used for mixed grazing, rural residential development and cropping. The numbers appearing in brackets refer to the relevant LCC Recommendation for the Ballarat Stud Area.

Water Supply System

Water from these bores can be supplied to the respective reticulation system in the towns of Streatham (population 110) and Mininera (population 40). This groundwater displays very high levels of dissolved salts and has limited domestic use. It is unsuitable for human consumption or irrigation. The water supplies are not treated. Residents rely on private rainwater tanks for drinking water.

The responsible water supply authority is the Shire of Ararat.

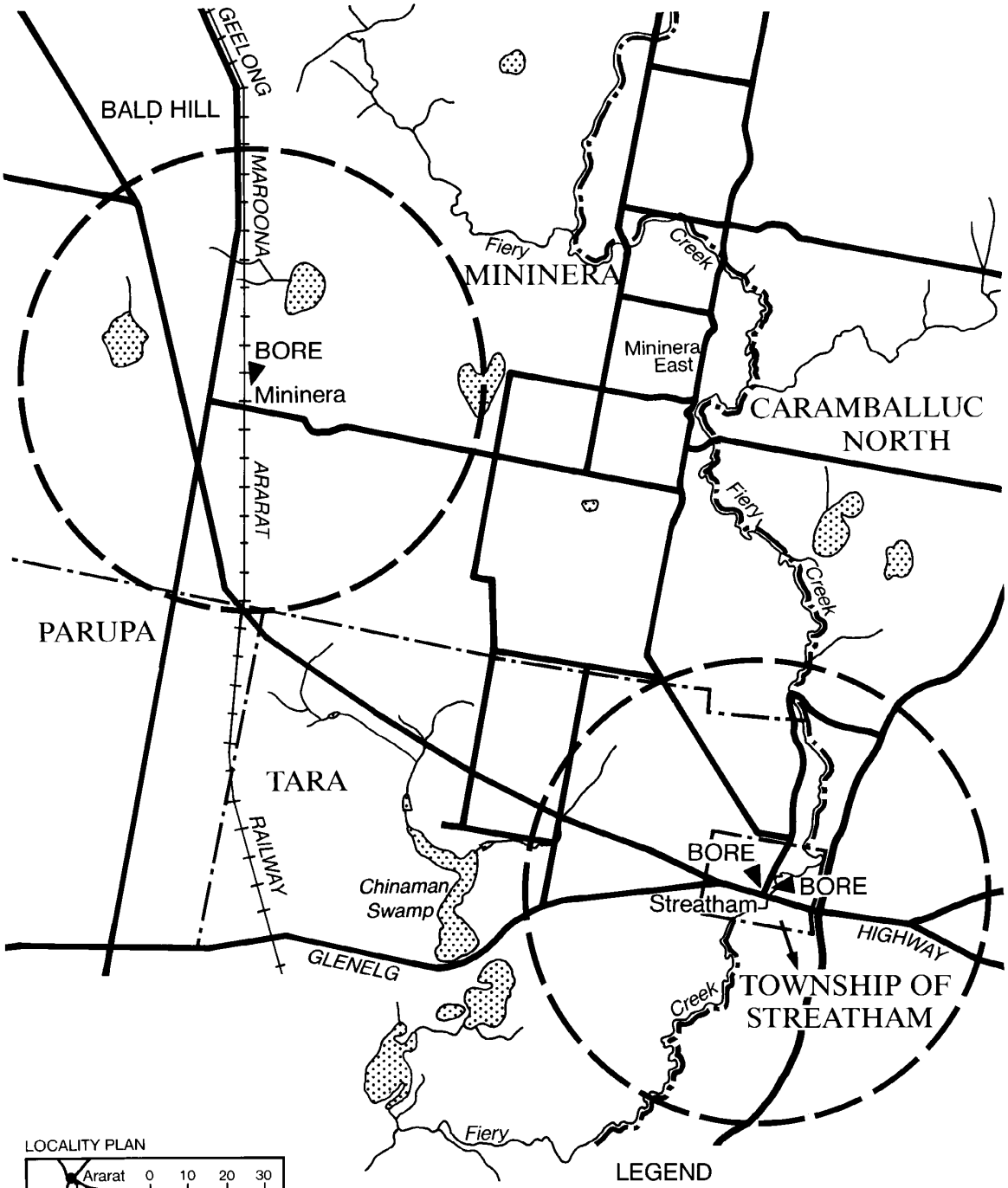
Administrative Areas

Parishes:	Carambulluc North, Tara, Mininera, Parupa
Municipalities:	Shire of Ararat, Shire of Ripon

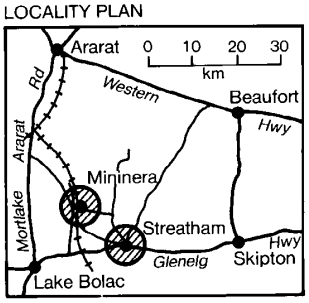
In view of the limited suitability of these bores for domestic use it is recommended their recharge areas not be considered for proclamation.

PLAN NO. S-1509

STREATHAM AND MININERA BOREFIELDS WATER SUPPLY CATCHMENTS



LOCALITY PLAN



MORTLAKE SPRING (MORTLAKE)
GROUNDWATER SUPPLY CATCHMENT

The catchment (1370 ha), in Western Victoria lies in the vicinity of Mortlake on the Hamilton Highway. The spring is located on the south eastern edge of the Township of Mortlake adjacent to Ca 19, on a low rise. The spring is thought to be part of a shallow groundwater aquifer which is linked to Mt Shadwell (to the north of Mortlake) which functions as an intake areas for this aquifer. A bore which augments supply is located on a road reserve adjacent to CA 29 Section 7 Parish of Mortlake.

The nearest surface drainage line is Stoney Creek which flows into the Hopkins River. The spring is located near the corner of Church Street and Boundary Road, Mortlake.

The Catchment

Recharge to the Mortlake groundwater supply is thought to be from the volcanic cone (scoria), Mt Shadwell. The catchment has therefore been defined as an area to the drainage divide of Mt Shadwell and otherwise to a radium of 2 km from the bore. He topography of the area consists of low rises giving way to a floodplain to the south and increasing elevation to the north. The vegetation outside the township is pasture with scattered eucalypts, mainly River Red Gum (*Eucalyptus camaldulensis*).

Rainfall/Elevation

Motlake	131 m	680 mm

Land Use and Tenure

The area around Mortlake township is predominantly freehold land. The township of Mortlake is located totally within the catchment. There is a scoria quarry at Mt Shadwell operated by Mortlake Shire Council.

Water Supply System

The spring supplies the township of Mortlake (population 1250). A bore located north east of the town provides a supplementary source in high demand periods generally November to March. This bore is thought to draw from the same aquifer as the spring. The town water is stored in a 3.4 ML storage tank to the north of the town. In terms of quality the water is slightly hard. High nitrate and *E. coli* levels are occasional problems.

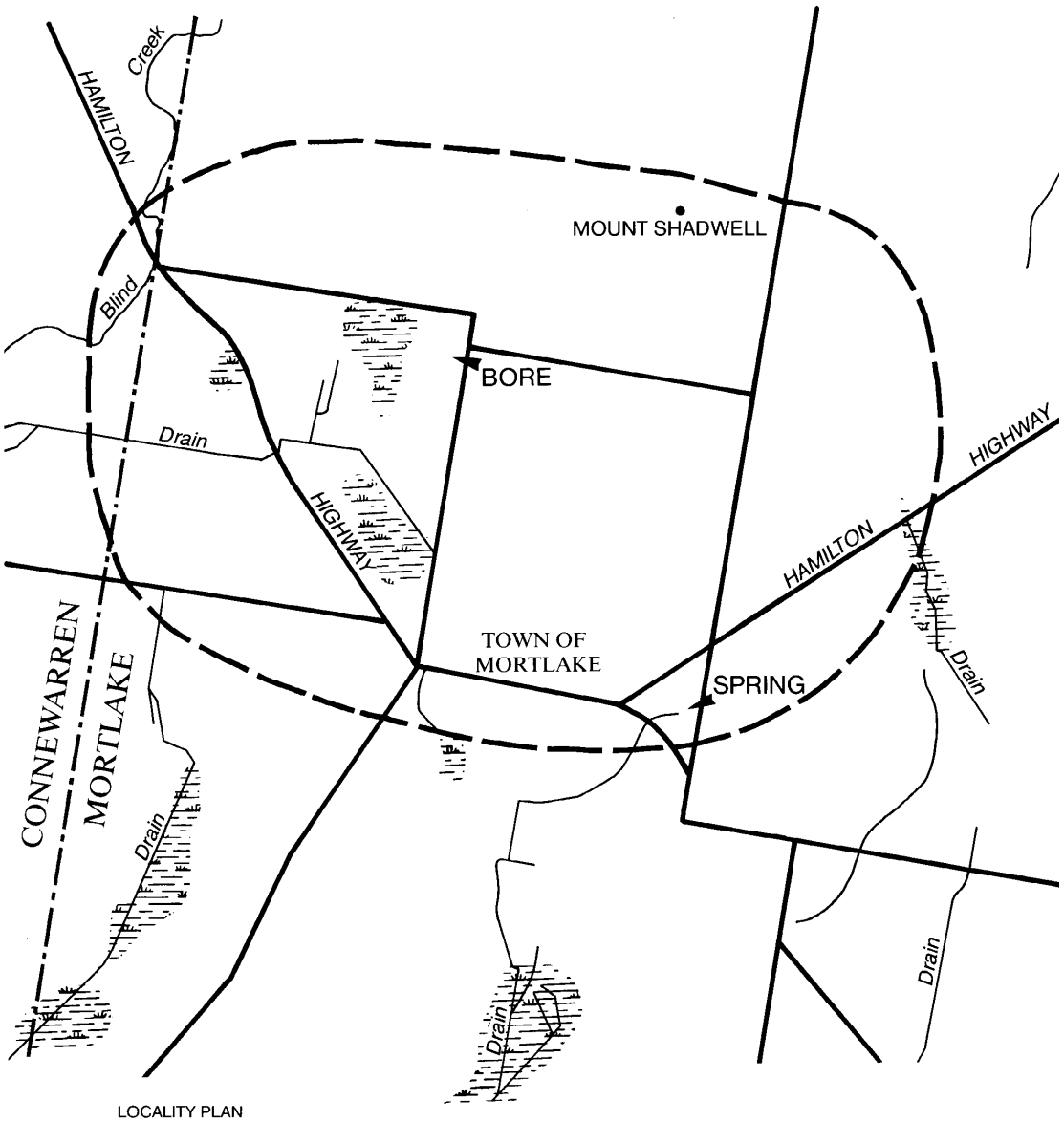
The responsible water supply authority is the Mortlake Water Board.

Administrative Areas

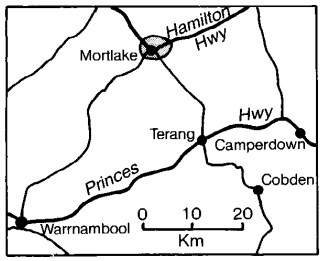
Parish:	Mortlake
Municipality:	Shire of Mortlake

PLAN NO. S-1488

MORTLAKE SPRING (MORTLAKE) GROUNDWATER SUPPLY CATCHMENT



LOCALITY PLAN



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METRES
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LEGEND

Catchment Boundary

Parish Boundary

MORTLAKE Parish Name

Sealed Road

SERRA RANGE TRIBUTARIES AND BOREFIELD (DUNKELD) WATER SUPPLY CATCHMENT

The catchment area is located south of Mount Abrupt at the southern tip of the Serra Range which forms part of the Grampians Ranges in Western Victoria. The catchment of 4,800 ha, comprises the upper headwaters of Waterfall Gully, the adjacent stream and the recharge areas associated with two bores that augment supply to Dunkeld. The surface water offtakes are located within the parish of Moutajup. The primary bore is located adjacent to CA 17C Parish of Dunkeld, the other bore is on a river reserve adjacent to CA 17B Parish of Dunkeld.

The Catchment

The characteristic features of the catchment are the Grampians cuesta land form and the basalt plains to the east. The Grampians cuesta is distinguished by long gentle, upward, westerly slopes (dip slopes) of Palaeozoic sandstones which end abruptly in the easterly escarpments (scree slopes). The recharge zone considered important for proclamation should therefore be to the drainage divide in the Grampians and elsewhere a radius of 2 km from the bores. The soils of the ridges and higher elevations of the Grampians Ranges are sandy skeletal, shallow soils dispersed amongst large areas of solid rock strata. Soil development increased and exposed rock decreases downslope, until, on the poorer drained scree and out-wash slopes, deep sandy soils may occur. The plant communities range from short heath/shrublands on the exposed, rocky, upper slopes; to short, sparse scrub/woodlands downslope to dry schlerophyll forest on the outwash slopes.

Elevation/Rainfall

Dunkeld	254 m	714 mm

Land Tenure and Use

The catchment area contains areas of public land including the Grampians National Park (A1), the Dunkeld offtake (E20), the Dunkeld storages (E41) and one bore is located on a river reserve (K1). The large areas of private land in the catchment are predominantly cleared and used for sheep grazing and cropping although some areas remain forested.

Water Supply Systems

A small offtake weir on Waterfall gully (E20) and an on-stream (110 ML) in the adjacent catchment divert water via a gravity feed pipeline in two service storages (36 ML each) which supply the township of Dunkeld (population 450). Two bores supplement supply in low flow periods. Supply is chlorinated.

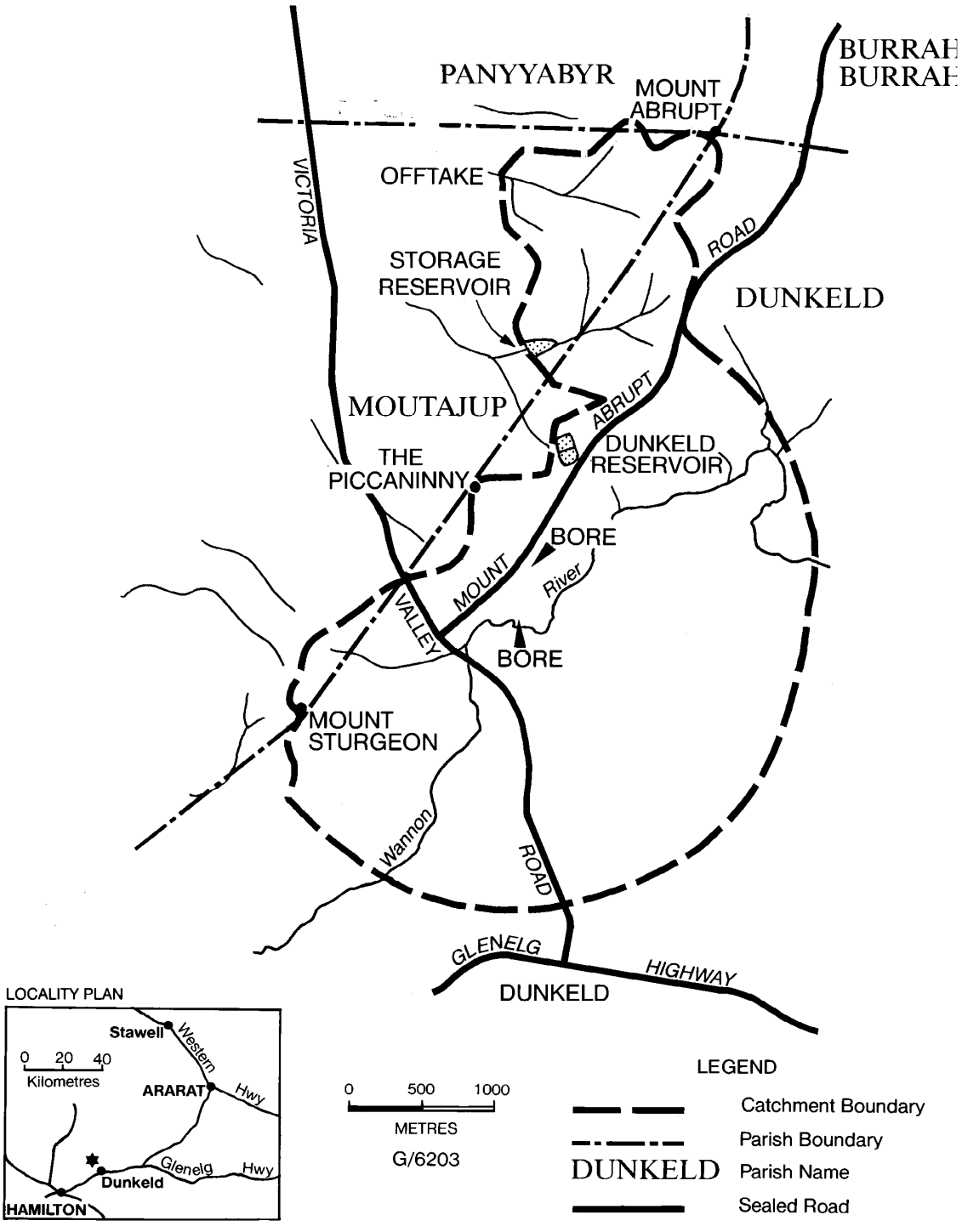
The Shire of Mount Rouse is the water supply authority.

Administrative Areas

Parishes:	Moutajup, Dunkeld, Panyyabry
Municipalities:	Shire of Dundas, Shire of Mount Rouse

PLAN NO.S-1492

SERRA RANGE TRIBUTARIES AND BOREFIELD (DUNKELD) WATER SUPPLY CATCHMENT



Recommendation

That the Land Conservation Council, under section 5(1) (b) of the *Land Conservation Act* 1970, recommend to the Governor-in-Council that the following catchments be proclaimed under section 22(1) of the *Soil Conservation and Land Utilisation Act*, 1958:

- Learmonth Borefield (Learmonth) Water Supply Catchment, Plan No. S-1511
- St. Enoch's Spring (Skipton) Water Supply Catchment, Plan No. S-1510
- Mortlake Spring (Mortlake) Groundwater Supply Catchment, Plan No. S-1488
- Serra Range Tributaries and Borefield (Dunkeld) Water Supply Catchment, Plan No. S-1492