

**FIFTEEN MILE CREEK AND GLENROWAN
SERVICE RESERVOIR CATCHMENTS**

(GLENROWAN WATER SUPPLY)

PROPOSAL FOR PROCLAMATION





**A REPORT ON THE
FIFTEEN MILE CREEK (GLENROWAN) AND
GLENROWAN SERVICE RESERVOIR
WATER SUPPLY CATCHMENTS**

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

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INTRODUCTION

Water supply for the township of Glenrowan (population 350) is taken from Fifteen Mile Creek. In addition significant contribution to supply comes from a separate catchment draining to the service reservoir. The Glenrowan Waterworks Trust is the body responsible for supply.

The water resources of the Fifteen Mile Creek Catchment are also used extensively for irrigation and for stock and domestic purposes. The demand for irrigation and the means by which the demand could be met from the water resources of Fifteen Mile Creek were the subject of an inquiry by a Parliamentary Public Works Committee in 1968/69. The Committee's report *included a recommendation that planning be undertaken for the construction of a storage at the Masons Hill site; but the project did not proceed because of economic considerations.

The section of the catchment downstream of Myrree has history of European settlement dating back to the 1850's. Since then, extensive development for agriculture has taken place in this section.

Developments within the higher section of the catchment, which is predominantly public land, have taken place over more recent years. This includes the conversion of some native forests to softwood plantations at the very top of the catchment.

The diverse nature of primary production in the catchment ranges from forestry (hardwood and softwood) to intensive agriculture (hops and potatoes). Mixed farming is common. Also cereal cropping and fruit growing are minor industries.

There are problems with stream sedimentation particularly at the offtake point on Fifteen Mile Creek. These problems appear to be increasing. The Trust's concern over this was outlined in a letter requesting that proclamation of the catchment to the offtake be made.

The catchment is located almost wholly within the Land Conservation Council's North East Study Area - District 3. A small section of catchment on the western boundary falls within District 2, and the catchment to the service reservoir falls within the Murray Valley Study Area. Council has published final recommendations for District 2 and for District 3 including the review undertaken for the Ovens Softwood Plantation Zone. A report has been published for the Murray Valley Study Area and recommendations will follow in due occurs.

Council policy for domestic water supply catchments is that an investigation by the Soil Conservation Authority should be made and, where appropriate, the catchment should be recommended for proclamation by Council in order to ensure a uniform procedure for land use planning within these areas.

This report briefly describes the catchments and recommends their proclamation.

* The Parliamentary Public Works Committee on Water Resources of Victoria Enquiry. Progress Report No. 9 - The Fifteen Mile Creek Victoria 1970.

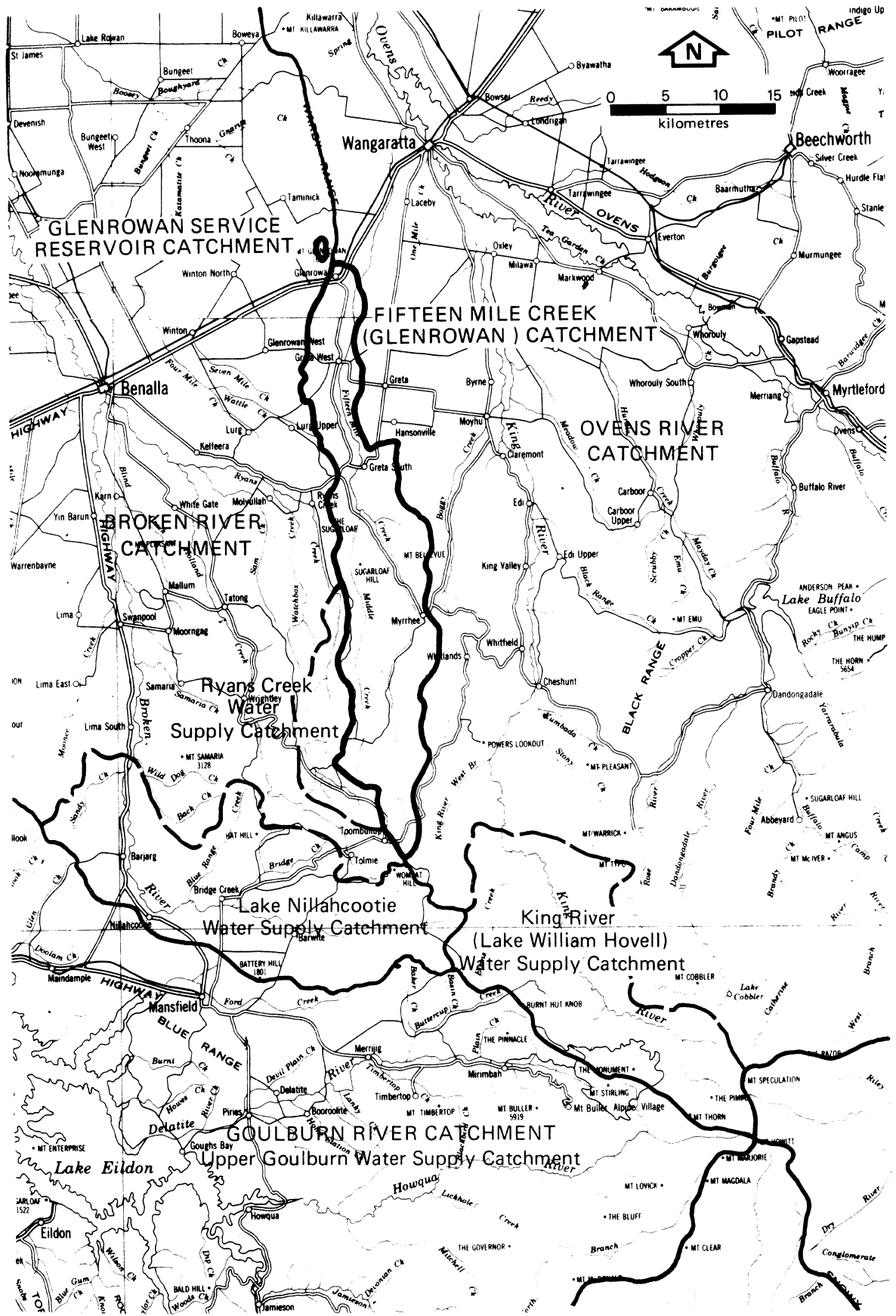


FIGURE 1 - CATCHMENT LOCALITY PLAN

GENERAL INFORMATION

Fifteen Mile Creek is the most westerly of the main streams draining to the Ovens River, refer Fig 1. From the headwaters just south of Toombullup, the narrow catchment extends to the north a distance of some 55 km to the offtake at Glenrowan taking in an area of about 310 km². Myrree, Greta South and Greta West are rural localities partly of wholly within the catchment.

Within the catchment to the Broken River is a separate catchment of about 105 ha. This drains to the service reservoir on the lower slopes of Mt Glenrowan.

The catchment falls principally within the Shire of Oxley, with small portions of Benalla Shire scattered along the western boundary and a small portion of Mansfield Shire at the southern extremity as shown in Fig. 2.

The Fifteen Mile Creek Improvement Trust administrators stream management works within the catchment to just south of the Fifteen Mile Creek and Middle Creek Junction (refer Fig. 2).

Parts of eleven parishes fall within the catchment as indicated on the catchment, Figure 4. These are the parishes of Dueran East, Glenrowan, Greta, Laceby, Lurg, Myrree, Tatong, Toombullup, Toombullup North, Whitfield and Whitfield South.

LAND AND LAND TENURE USE

The catchment is comprised of about 180 km² of freehold land (58%) and about 130 km² of public land (42%).

The catchment above Myrree is basically public land. Freehold land in this section is confined to the flats (hop growing) adjacent to Fifteen Mile Creek or occupies the better soils of the plateau about Toombullup, Archerton or the broad ridges extending south, where potatoes, nuts and fruit are grown. Within the central catchment area from Myrree to Greta West the proportion of public land diminishes. There is little downstream of Greta South. Forest remains on some freehold land but grazing (sheep and cattle including dairying) is the predominant use with cultivation of the creek flats for hop production.

Beyond Greta West to the north, grazing continues to be the predominant use. Cereal cropping is carried out intermittently.

Reserved Forest and unreserved crown land accounts for the bulk of public land in the catchment. Two grazing licences are current for part of this area and 162 ha is held under an improvement purchase lease. There is extensive but intermittent reserved or unreserved crown land abutting Fifteen Mile and Middle Creeks, much of which is held under water frontage licences. Softwood plantations presently occupy 450 ha in the highlands. During the early establishment phase vigorous regrowth of silver wattle occurs on these areas necessitating broad-acre control measures. Presently aerial spraying of herbicides is the chief control measure, with ground spraying and manual clearing also used where appropriate.

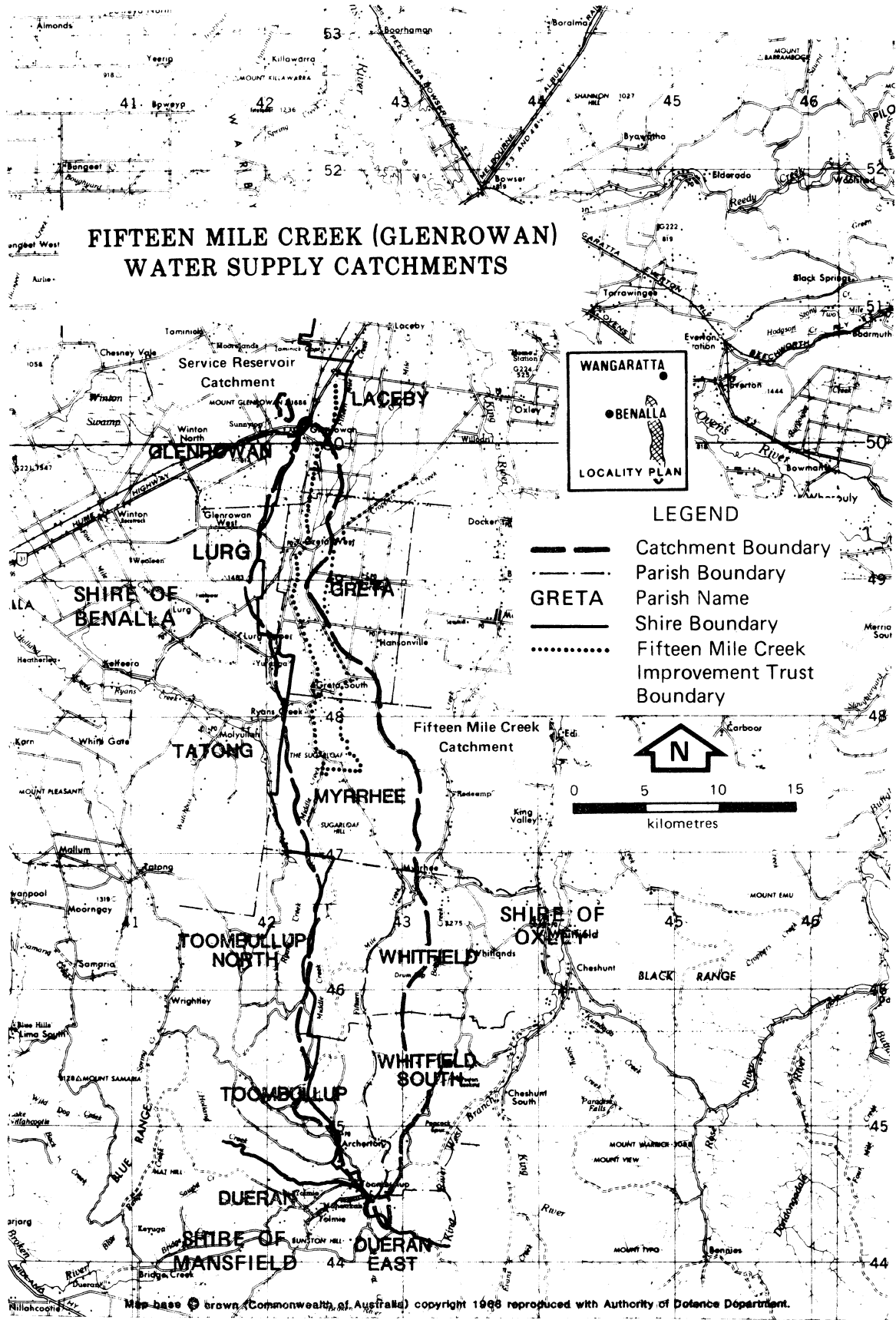


FIGURE 2 - MUNICIPAL BOUNDARIES

Proposals for progressively increasing the area under softwood are contained in the final recommendations for the Ovens Softwood Zone published by the Land Conservation Council. These together with the final recommendations for the North East Study Areas - Districts 2 and 3 are shown on Fig. 3 as they relate to the catchment. An edited extract of the recommendations is included in Appendix 1. Recommendations of the Ovens Softwood Zone are still under consideration by Government. The Drum Top Reference Area recommendation has been implemented.

Gemstone prospecting within the streams occurs, and recreation activities, particularly touring and camping, in the upper catchment is popular.

The catchment supports a broad range of intensity of land uses and, in respect to water supply catchment values, complex issues surround some of these uses. Public concern has been expressed at the use of chemical sprays for controlling regrowth within the softwood conversion areas. Similar concern has been raised at the use of sprays and other agricultural chemicals associated with hop growing; also, cultivation and other activities adjacent to streams have been questioned, particularly where water frontage licences are issued. There are some of the issues that arise from time to time but they have not been investigated in the present study. Experimental work concerning the effects of aerial spraying and stream water quality has been carried out by the Forests Commission.

CATCHMENT FEATURES

(a) Topography, Geology, Soils

Six geomorphic zones can be identified within the catchment. The distinguishing features attributed to these by Rowe* together with other information are given below.

- (i) **Plateau lower than 1200 metres** - Land in this zone occupies areas chiefly above 770 metres, straddling boundaries with the adjacent catchments to the south, east and west. Maximum elevation within the catchment (1020 m) occurs in this zone. Upper Devonian acid lavas (predominantly rhyolite and rhyodacite), lower carboniferous sediments and remnants of Tertiary basalt are the principal components of a geological complex extending through the zone. Red gradational or brown gradation type soils are the most common.
- (ii) **Mountains with Plateau** - Typical of land in this zone is the Drum Top area, south of Myrree, a mountain with a plateau at 770 m elevation from which long steep slopes descend to narrow valleys. Upper Devonian acid lavas form the basement rock for the zone that extends in a NW belt from the Drum Top - Myrree area to Ryans Creek locality, taking in Sugarloaf Hill and The Sugarloaf features. Predominant soils are the weakly bleached reddish brown or the friable brown gradational types.

* Rowe R. K. "A Study of the Land in the Catchments of the Upper Ovens and King Rivers". Soil Conservation Authority Vic. (In press).

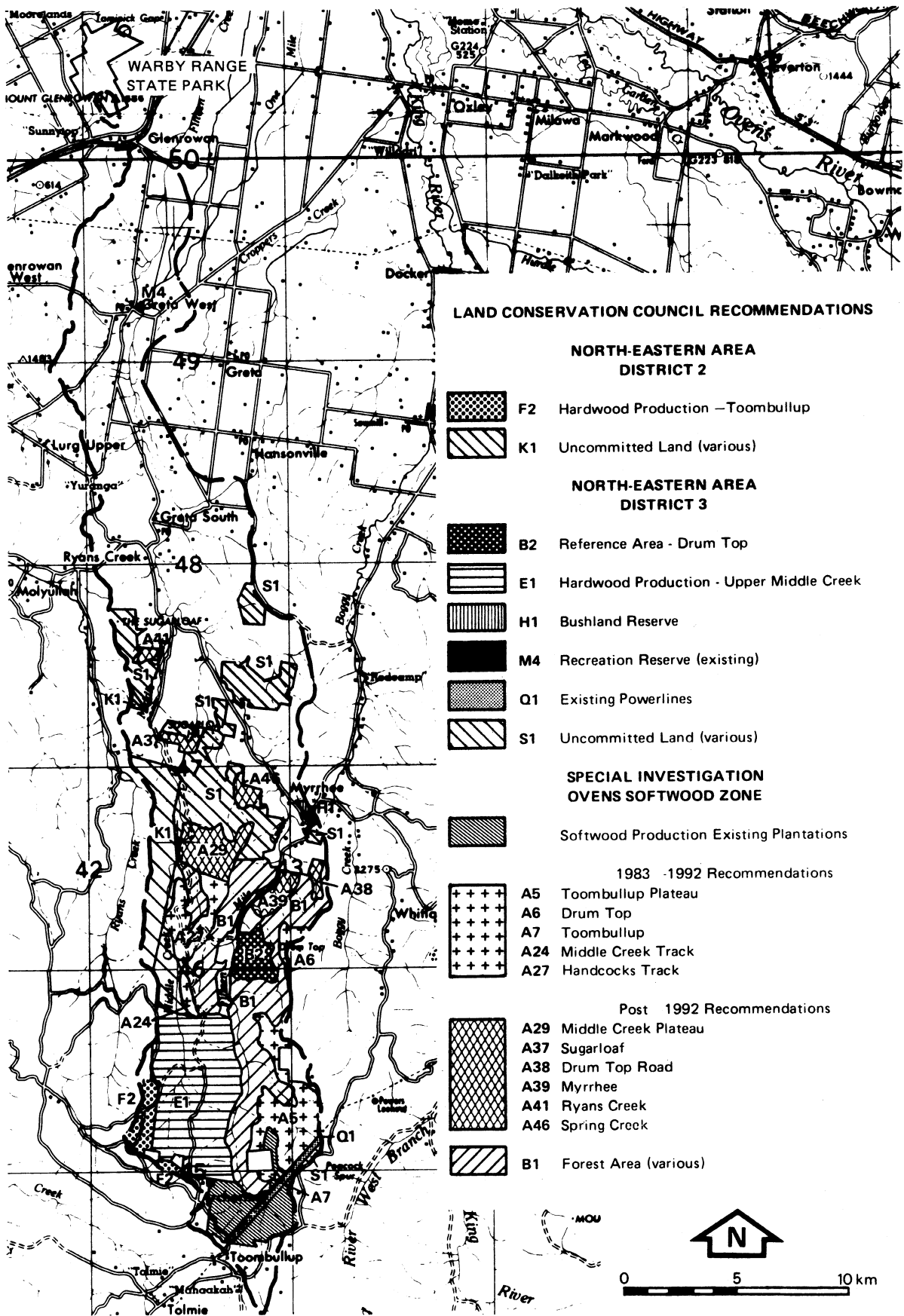


FIGURE 3 - LCC RECOMMENDATIONS

- (iii) **Mountains** - Land with relatively sharp ridges and spurs from which long steep slopes descend to the narrow valleys of the upper Fifteen Mile and Middle Creeks. Upper Devonian acid lavas are the major rock types with minor occurrences of Lower Carboniferous sediments and Tertiary (older) basalt. The most common soils are friable brown or reddish brown gradational types.
- (iv) **Hilly Lands with Moderate Slopes** - Land between Myrree and Greta South or straddling the catchment boundary intermittently along the western side north of Ryans Creek locality. Hills generally have lower crests and ridges on Ordovician sedimentary material. Where the capping of Tertiary basalt occurs, crests are broader or plateau like. Predominant soils are the weakly bleached reddish brown gradational types and red gradational soils on basalt. Less common are red duplex or yellowish brown duplex types.
- (v) **Hilly Land with Gentle Slopes** - Land widely distributed throughout the lower catchment as low residual hills, alluvial-colluvial fans or terraces occurring on a range of geological rock types including Ordovician sediments, Upper Devonian acid lavas, Lower Carboniferous sediments, and Quaternary alluvium - colluvium. The most common soils are reddish brown gradational, and the red duplex types are brown and grey loams on alluvium.
- (vi) **Alluvial Plains** - Land within the flood plain of the present system and its associated low terraces. These comprise the creek flats in the upper and central catchment areas, but increase in extent as the broad flood plain develops north of Greta South. The elevation of the flood plain at the water supply offtake is 170 m. All alluvium is of Recent origin on which brown and grey loams and yellowish brown gradational type soils predominate.

The service reservoir on the lower slopes of Mt Glenrowan drains to the Broken River catchment. The catchment to the reservoir is within a zone described by Rundle and Rowe* as granite ranges and their footslopes: an area of low rocky peaks and spurs rising above relatively flat remnants of plateau that are moderately dissected by numbers of small streams. The western slopes of Mt Glenrowan (575 m), a rocky peak, drain to the reservoir. The granitic soils are coarse sandy loams or pale to weakly bleached gradational types.

(b) Climate

The southern and most elevated section of the catchment receives an average annual rainfall of 1500 mm. As the catchment extends to the north rain fall decreases, with the average for the plain being less than 700 mm per year. High peaks receive occasional snowfalls. Rainfall is higher during the winter, with the six wettest months, May to October, accounting for 63% to 65% of the annual average. The plains receive marginally more of the annual rainfall over summer (18.1%) than the highlands region (14.2%).

January and February are the hottest months when the mean maximum temperature ranges from 23°C in the highlands to 31°C on the plains. Temperatures in July, the coldest month, range from 7°C to 13°C for the respective locations.

* Rundle, Allen S. and Rowe R. K. "A Study of the Land in the Catchment of the Broken River" Soil Conservation Authority Victoria 1974.

(c) Vegetation

Approximately half the catchment land still carries native vegetation. Most of the cleared private land carries pasture, although some areas within the highlands have been developed for softwood plantations.

The forested upper catchment comprises mixed species forest, with narrow-leaf peppermint the dominant species in association with blue gum, candlebark, brittle gum, broad-leaf peppermint and red stringybark. Messmate stringybark is found on the relatively "flat" plateau sites of the highlands where deep clays are present. Broad leaf peppermint forest occupies the poorer sites at the higher elevations and becomes increasingly common in the relatively drier north where it occupies the moister sites. On the hilly land the drier sites mainly carry a long-leaf box type forest in association with red stringybark and red box.

Improved pastures have generally been developed on the plains and valley floors north of Myrree with native pastures occupying the drier slopes. Some of the original native species including red gum, long-leaf box and red box have been retained, mainly about the streams.

WATER SUPPLY DETAILS

(a) Glenrowan Township Supply

The main source of supply is pumped from Fifteen Mile Creek to an adjacent storage basin; the John Edwin Scott Reservoir, of 20 ML capacity. From there the water is raised some 105 m to the town service reservoir (32 ML) located on the lower slopes of Mt Glenrowan for gravity feed to the town.

The catchment to the service reservoir includes an adjacent area from which diversion is made via an open channel. The total contribution from this catchment to township supply in the average year would amount to about 30%.

Approximately 143 connections are serviced by the Trust with an average annual consumption of some 50 ML.

Bacteriological analysis of water samples from the system is carried out monthly. The long detention period generally provides sufficient times for a natural improvement in bacteriological quality and turbidity to occur. However, due to repeatedly high levels of *E. Coli* being detected in samples, chlorination of the supply has been recommended to the Trust.

Additional problems concerning the Trust are: low flows, or the cessation of flow in summer or early autumn; the sporadic occurrence of algal blooms in the service reservoir necessitating copper sulphate treatment; and the build up of sediment in the stream at the offtake.

With a view to augmenting supply during the 1982/3 drought an investigation of ground water supplies beneath the plain, near the offtake, was carried out. No worthwhile source was found within a depth of 130 m.

(b) Irrigation, Stock and Domestic Supply

The water resources of Fifteen Mile Creek are heavily committed to stock and domestic and irrigation uses. A total of 1262 ML is provided through irrigation

permits mainly for the hop growers. In addition to the requirements of riparian users permits for stock and domestic diversions account for a further 164 ML.

During the period from early November to late January a portion of the surrounding plains area is serviced from Fifteen Mile Creek by diversion at the Greta West weir. The amount and duration of these diversions are regulated on the basis of flow levels in Fifteen Mile Creek.

Potential Hazards to the Supply

Existing or potential problems of greatest concern affecting the supply are:

- (i) erosion of the bed and banks of streams above Greta south and the resultant build up of sediment below this point. Considerable volumes of sediment are transported by the stream, particularly during the frequent flooding the area experiences, resulting in the siltation of the weir at Greta West and the Trust's headworks.
- (ii) Low or non-existent summer flows.
- (iii) Stock access to streams, particularly Fifteen Mile Creek, and animal wastes in agricultural run-off reaching and concentrating in the service reservoir which is possibly a main contributor to high bacterial numbers.
- (iv) The extensive network of unmade roads throughout the catchment which is considered to be a major source of silt and turbidity.
- (v) Activities associated with hop growing along the Fifteen Mile and Middle Creeks, including many instances of cultivation extending to the banks of the streams or the frequent use of the creek bed or banks for anchoring trellis supports.
- (vi) The possibility that herbicides used to control regrowth during the early years of softwood establishment, or sprays and agricultural chemicals used in farming and horticulture may find their way to the stream. Relevant FCV standing instructions and specifications apply to the conduct of aerial applications of pesticides in State Forest areas.
- (vii) The intermittent and relatively uncontrolled camping within the forested areas particularly near streams. This includes campers redirected from the adjacent Ryans Creek water supply catchment where camping numbers are to some degree regulated.

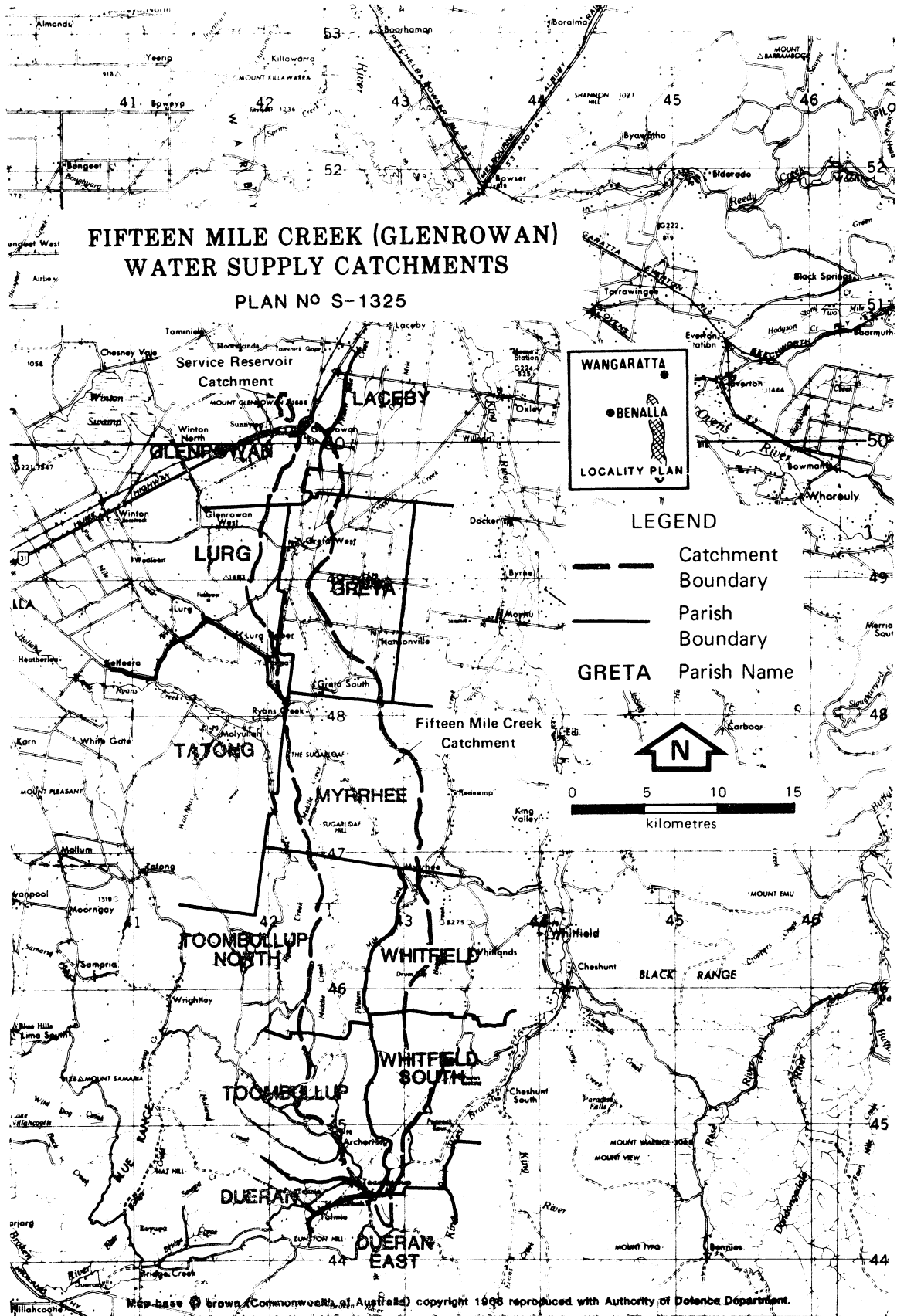


FIGURE 4 - PROCLAMATION PLAN

RECOMMENDATIONS

That the Land Conservation Council under the provision of Section 5(1)(b) of the *Land Conservation Act 1970*, recommend to the Governor in Council that the catchment of Fifteen Mile Creek to the offtake for the Glenrowan Waterworks Trust, and the catchment to Glenrowan Service reservoir, as shown on Plan No. S-1325 (Fig. 4) be proclaimed under the provisions of Section 22(1) of the *Soil Conservation and Land Utilization Act 1958*.

APPENDIX 1

FIFTEEN MILE CREEK WATER SUPPLY CATCHMENT

LAND CONSERVATION COUNCIL FINAL RECOMMENDATIONS NORTH-EASTERN AREA, DISTRICT 2

Hardwood Production

F2 - Toombullup (Archerton)

That the area indicated on figure 3 be used for hardwood timber production

And that it remain or become reserved forest or remain as Benalla Waterworks Trust land managed in conjunction with the Forests Commission.

The use of land within this catchment is subject to specification by notice or by determination made by the Soil Conservation Authority.

Uncommitted Land

K1 - That the land indicated on figure 3 be used to:

- (a) Achieve or maintain stability of the land and maintain its usefulness for all possible future uses.
- (b) Protect water catchments.
- (c) Conserve native fauna and flora
- (d) Provide other activities and products that are necessary to achieving, or do not conflict with, the uses above.

and that it be uncommitted land and become unoccupied Crown Land proclaimed as protected forest.

Existing Plantations

A51 That the present plantations and those areas previously allocated, as shown on figure 3, be used for the production of softwood products and the provision of other goods and services compatible with the primary use, as well as providing opportunities for education and recreation.

Forest Area

B1 That the areas shown on figure 3 be used for:

- (a) The protection of the adjacent area recommended for softwood production.
- (b) Conservation of fauna and flora, and preservation of scenic values
- (c) Low-intensity hardwood production, recreation, education, forest grazing, honey production and mining, where these activities do not conflict with (b) above.
- (d) Catchment protection and water supply.

And that the areas be reserved forest under the provisions of the *Forests Act*, 1958 and be managed by the Forests Commission.

PROPOSED RECOMMENDATIONS MURRAY VALLEY AREA

Reference Area

That the area listed below and shown on figure 3:

- (a) Be used to maintain natural ecosystems as a reference to which those concerned with studying land for particular comparative purposes may be permitted to refer, especially when attempting to solve problems arising from the use of land.
- (b) Be surrounded by a buffer; that the authority currently managing the recommended buffer be responsible for the management of the enclosed reference area; and that the delineation of the buffer zone be by joint agreement between the managing authority and the advisory committee.

B2 - Drum Top (440 ha)

Upper Devonian rhyodacite; plateau and steep slopes. Elevation 600-820 m. Approximate annual rainfall 1,520 mm. Open forest II broad-leaf peppermint, open forest III narrow-leaf peppermint. Land system: Drum Top.

To be reserved under section 14 of the *Land Act* 1958 and be managed by the Department of Crown Lands and Survey.

Note: The steep escarpment adjoining private property should be managed as a buffer area.

Hardwood Production

That the area listed below and shown on figure 3 be used to:

- (a) maintain the local character and quality of the landscape; and
- (b) provide opportunities for passive recreation such as picnicking and walking and that it be permanently reserved under section 14 of the *Land Act* 1958 and managed by the Department of Crown Lands and Survey.

Expansion of any existing recreational facilities or new development should be permitted only where this does not conflict with the primary aim.

- H1** 36 ha adjoining allotment 12B of section 3, Parish of Whitfield, but not including the State School plantation. The management authority should permit the use of part of this reserve for a deviation of the Benalla Whitfield road if this is eventually required.

Recreation

That the area (described below and shown on figure 3) be used for organised sports and informal recreation as permitted by the managing authority.

And that it be permanently reserved under section 14 of the *Land Act* 1958 and managed by the Department of Crown Lands and Survey.

- M4** Existing recreation reserve

Utilities

- Q1** That the existing powerline easement continue to be used for this purpose.

Uncommitted Land

- S1** That the area shown on figure 3 be used to:

- (a) Maintain the capability of the land to meet future demands
- (b) To produce those goods and services required by the community (such as forest produce, grazing and military training) that can be supplied without seriously reducing the long-term ability of the land to meet future demands.

And that the land be Crown land withheld from sale and be protected forest under the provisions of the *Forest Act* 1958.

LAND CONSERVATION COUNCIL FINAL RECOMMENDATIONS

OVENS SOFTWOOD PLANTATION ZONE SPECIAL INVESTIGATION

Softwood Production

A3 That the areas shown on the map and listed in the schedule below (A5 to A6) could be used for softwood plantation establishment in accordance with the guidelines in these recommendations and the planting order shown in the schedule.

that, should the government decide that public land is to be used for softwood establishment, then areas A5 to A27 be planted in the years 1982 to 1992 inclusive.

and that the areas required for softwood establishment be reserved forest under the provisions of the *Forests Act* 1958 and be managed by the Forests Commission.

Land that could be considered for softwood plantation establishment from 1983 to 1992:

- A5** Toombullup Plateau (1,350 ha)
- A6** Drum Top (450 ha)
- A7** Toombullup (60 ha)
- A24** Middle Creek Track (95 ha)
- A27** Handcocks Track (620 ha)

Land that could be considered for softwood production after 1992.

- A29** Middle Creek Plateau (630 ha)
- A37** Sugarloaf (110 ha)
- A38** Drum Top Road (94 ha)
- A39** Myrree (225 ha)
- A41** (Ryans Creek (60 ha)
- A46** Spring Creek (155 ha)