POTENTIAL USE OF THE CATCHEMNT

A committed area of land may have one primary function such as agricultural production, or it may have more than one function, as occurs with multiple use, which may involve, for example, timber production, water supply and recreation. Where there is more than one function, decisions should be made on the order of importance of these functions, including the possibility of coequal functions.

Where there is no designated primary function, as is the case with uncommitted land, the management should be such that it does not impair the capability of the land for any possible future function, including those which are not yet indicated.

For both single and multiple land use, management should be such that the primary functions are not impaired. This may necessitate adoption of special management techniques, and the acceptance of sub-optional production from secondary uses, in order to safeguard the primary functions.

Decisions as to what should be the primary function swill require consideration of the capability of the land for various functions, the need for the products, the possibility of alternative sources and the effect of each function on other uses.

The information presented in this report leads to the conclusion that, for the catchment as a whole, the primary function is the supply of water. In particular parts of the area, other coequal primary functions may be assigned but secondary functions may be acceptable insofar as they do not impair the primary functions. Table 6 sets out an attempt to rate each land system according to its productivity for specified uses and the hazards to other feasible uses.

Table 7 provides an estimation of the relative value for water production of different parts of the catchment, and Table 8 is an estimate of the proportion of the total catchment water yield derived from each land system. Figure 24 shows the precipitation in relation to estimated water production for each land system.

The Buller, Taponga and Bindaree, Howqua and Jamieson land systems together account for almost all the water which reaches the storage (92 per cent). The remaining four areas – Maintongoon, Eildon and Mansfield land systems and Lake Eildon itself – All have average annual evapotranspiration rates in excess of precipitation. Runoff can thus be expected to occur only from late winter rain after the soils have been completely wetted, or from storm rain which exceeds infiltration capacity. Only in the cleared or eroded parts of the Eildon and Mansfield land systems does surface flow to an appreciable extent. A small additional amount of water is contributed by the drier land systems as a result of surface runoff from areas immediately adjacent to streams. Although this is a small proportion of the total yield from the catchment, it warrants careful attention because it carries most of the sediment entering the reservoir.

Table 6 – Rating of Land Use Potential of Land Systems.

(i) Estimated level of productivity for the defined use:

? Unknown or uncertain
- Nil (or nor a possible use)
+ Low level of productivity for specified use
+ + Moderate level of productivity
+ + + Moderately high productivity
+ + + + High productivity

(ii) Estimated degree of hazard to other possible uses:

- Nil, no hazard to other possible uses
+ Low hazard to other possible uses
+ + Moderate hazard
+ + + Moderately high productivity
+ + + + High productivity

NOTE: (a) (+) indicates possible increase in range
(b) if development for s specified use involves extension of roads or other earthworks, hazard rating rises by at least one unit.

e.g + + + indicates a moderately high productivity for the specified use and a high hazard to the other
+ + + + possible uses.

Land System	Water Supply	Timber Production	Wildlife Habitat	Recreation	Forest/Range Grazing	Agricultural/ Grazing	Agricultural/ Cropping
Buller	+ + + + -	-	+ + + + -	+ + + + + +	(+) + +(+)	-	-
Taponga	+ + + -	+ + + + + (+)	+ + + + -	+ + + +	+ + + (+)	-	-
Bindaree	+ + + -	+ + + + + (+)	+ + + + -	+ + + +	+ + +	-	-
Howqua	+ + + -	+ + + +	+ + + (+) -	+ + + +	+ + +	-	-
Jamieson	+ + -	+ + +	+ + + (+) -	+ (+) + +	+ + +	-	-
Maintongoon	+ -	+ + +	+ + + (+) -	+ (+) + +	+ + (+)	(+) + + + (+)	-
Eildon	+ -	- (+) + ++	+ + -	+ +(+) + +	+ + (+ +)	++ + + + (+)	-
Mansfield	+ -	- (+) +	? -	(+) ? +	+ +	+ + + + +	+ (+) + +(+)

Table 7. Estimated Proportion of the Precipitation which becomes runoff for each Land System (based on monthly precipitation, calculated evapotranspiration, soil depth and available water capacity)

Land system	**Surface Area (km²)**	**Runoff as a Percentage of Precipitation.**
Buller	142	80
Taponga and Bindaree	1075	55
Howqua	698	45
Jamieson	737	35
Maintongon	323	25
Eildon	478	20
Mansfield	272	20

Table 8 – Proportion of Inflow to Lake Eildon Contributed by each Land system (combines runoff proportion, precipitation and area of each land system)

Land System	**Surface Area (% Total Land Area)**	**Proportion Contributed (%)**
Taponga and Bindaree	28.9	50
Howqua	18.7	21
Buller	3.8	11
Jamieson	19.8	10
Eildon	12.8	3
Maintongoon	8.7	3
Mansfield	7.3	2

The proportion of the annual inflow contributed to Lake Eildon by the Mansfield, Maintongoon and Eildon land systems is small. Management directed towards reducing storm runoff or increasing water usage by pastures in these areas will have no significant effect on the volume contributed to the storage. It could however, be highly effective in reducing sedimentation and improving pasture productivity.

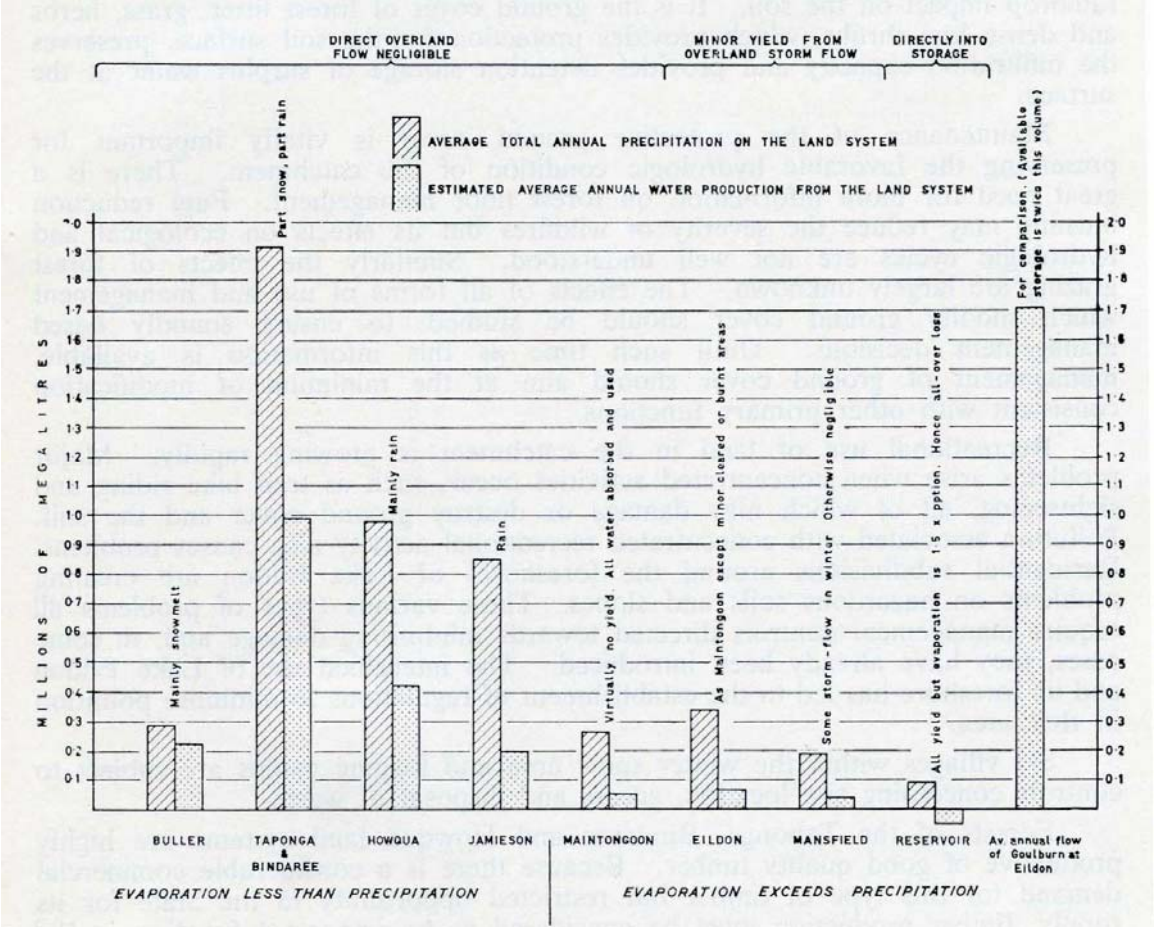

Figure 24 – Precipitation and Water Production from Land System

The Taponga, Bindaree and Howqua land systems which contain the commercial timber stands contribute over 80 per cent of the water. Any hydrological timber changes resulting from large scale forestry activities may cause unfavourable as well as favourable changes in the yield, rate of flow and quality of water from these areas. The effect of proposed changes should be very carefully evaluated before they are made.

Although the trees on exposed high elevation country map trap additional water by intercepting fog and mist (Costin and Wimbushm 1961), they are predominantly water users and so contribute to water losses rather than gains. Furthermore, the height of the canopy makes the trees of little value in reducing raindrop impact on the soil. It is the ground cover of forest littler, grass, herbs and dense low shrubs, which provides protection for the soil surface, preserves the infiltration capacity and provides storage of surplus water at the surface.

Maintenance of the protective ground cover is vitally important for preserving the favourable hydrologic condition of the catchment. There is a great need for more information on forest floor management. Fuel reduction burning may reduce the severity of wildfires but its effects on ecological and grazing are largely unknown. The effects of all forms of use and management which modify ground cover should be studied, to ensure soundly based management decisions. Until such time as this information of modification consistent with other primary functions.

Recreational use of land in the catchment is growing rapidly. Major problems arise when concentrated activities occur, such as trail bike riding and sightseeing, all of which may damage or destroy ground cover and the soil. Pollution associated with concentrated recreational activity also cause problems. Residential subdivisions around the foreshores of Lake Eildon are creating problems on hazardous soils and slopes. These various types of problems all require management controls directed towards minimising damage and, in some cases, they have already been introduced. The intensified use of Lake Eildon and its foreshores has led to the establishment of regulations to minimise pollution in that area.

Ski villages within the winter snow area and logging camps are subject to controls concerning site location, access and disposal of waste.

Forests of the Toponga, Bindaree and Howqua land systems are highly productive of good quality timber. Because there is a considerable commercial demand for this type of timber but restricted opportunity in the State for its catchment. Nevertheless, the harvesting of timber should not be detrimental to the water yield and quality. To achieve this, management of logging practices must be carefully considered and executed.

The value of forests for timber production in the other land systems is low. Production of limited quantities of fence timbers, shed poles and firewood is the major activity in these areas. The aim of management of these land systems should therefore be to safeguard the catchment values.

Summer grazing of cattle in the higher rainfall forests may be regarded as a subsidairy function, but there are ample areas of cleared land elsewhere which could be developed to increase carrying capacity if the need arose. Alpine grazing in the Buller land system causes damage to ground cover and loss of hydrologic effectiveness. It cannot be regarded as a form of use compatible with water production.

Values of wildlife habitat are likely to vary with the extent of particular types of native vegetation and with the degree to which it has been modified (Anon., 1973). Values thus should be high in the high mountains of the Buller land system, and low in cleared areas of the Mansfield, Eildon and Maintongoon land systems. Use as wildlife habitat is compatible with the water supply function.