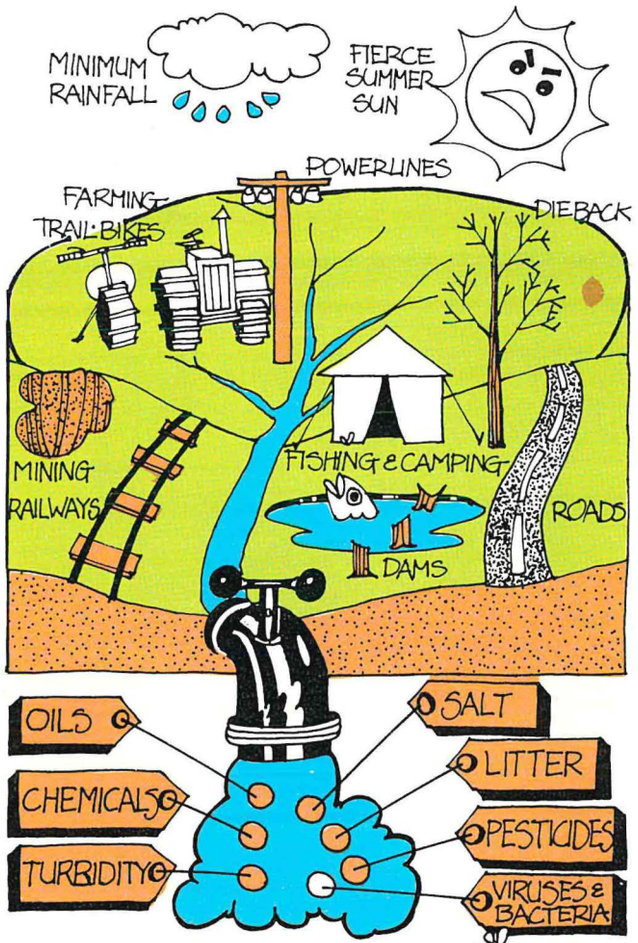
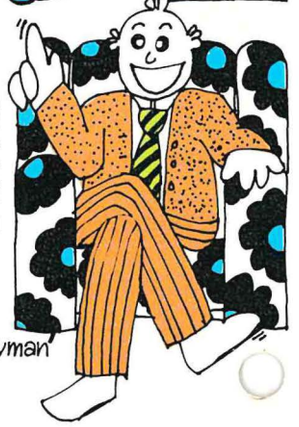
UNMANAGED USE OF THE CATCHMENTS CAN LEAD TO SERIOUS LOSS IN WATER QUALITY



I want a house with a garden, a washing machine, a tiled roof and aluminium windows. I want to go camping, picnicking and fishing in the bush. I need fruit. I must have electricity and want a higher standard of living at no increased cost.



"Mr.Everyman"

Perth gets 80% of its fresh water from the Darling Range jarrah forest catchments. These supplies are not guaranteed or automatic, and care must be taken if they are to continue in the future. This pamphlet describes catchments, how they work and what must be done to protect our water sources.

WHAT IS A CATCHMENT?

A catchment is a complete and easily identifiable ecological unit. It is that area of land which encompasses a whole river system and which is bounded on all sides by a water shed. Its shape is sculptured by water and all rain falling onto it will be carried into the river system.

WHY MANAGE CATCHMENTS?

It might be said that catchments have been providing water since the dawn of time without needing to be managed by man so why do they need managing now. The answer is simply that man, because of increasing population and improving lifestyle, is in danger of demanding more from the catchment environment than it can supply on a continuous basis.

The demand for water is rapidly approaching the maximum capacity of Darling Range catchments. At the same time the forests are facing the threats of increased salinity and jarrah dieback, both of which could have devastating effects on water supplies. Since 1963 large areas of catchment have been open-cut mined for bauxite, an ore of aluminium. There has also been widespread clearing for reservoirs, roads, railway and power lines and for light agriculture. The cumulative effect of all these activities is already showing signs of overtaxing the stability of the catchments and hence their ability to provide high quality water.

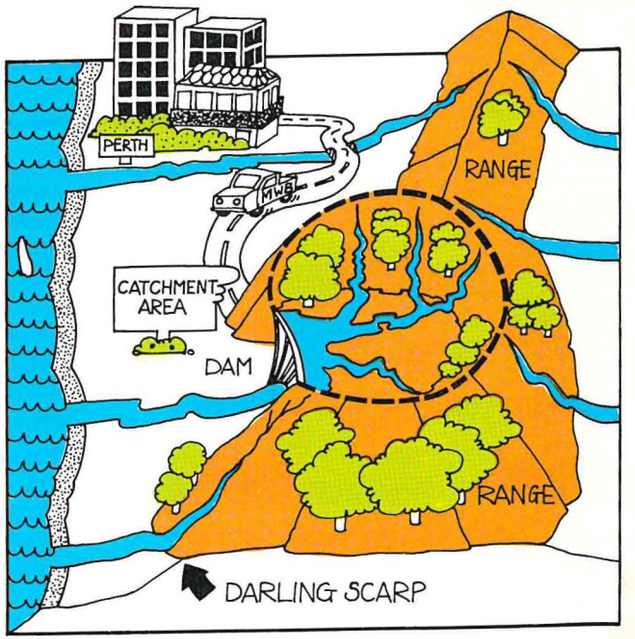
It is the aim of the Metropolitan Water Board to supply water to the following criteria:

WATER QUALITY

Colour	Not discernible
Turbidity	Not discernible
Salinity	Less than 500 mg/l
Chemical Pollutants	Negligible
Bacteria	Nil
Viruses	Nil

METROPOLITAN WATER BOARD
FORESTS DEPARTMENT
September 1979

CATCHMENT MANAGEMENT— caring for the sources of our water



SALINITY

Increased salinity poses the single greatest threat to metropolitan water supplies. Three factors are important:

- relatively large inputs of salt in rainfall.
- deep soils with a high capacity for water storage.
- a native vegetation which is adapted to consume water.

As the winds which bring rain to the South West sweep across the Indian Ocean they absorb salt, depositing between 60 and 260 kg each year on each hectare of forest. Where the soil is either porous or shallow, or where rainfall is high, most of this salt is flushed from the soil and does not accumulate. However, in low rainfall areas where heavy soils slow water movement, the deep-rooted native vegetation consumes nearly all the rainfall. The roots absorb the water but not the salt. Therefore, over thousands of years, large quantities of salt have built up.

Problems arise when the natural forest vegetation is disturbed, for example by clearing.

JARRAH DIEBACK

This is a plant disease caused by the soil-carried fungus *Phytophthora cinnamomi.* It damages plants by attacking their root system, thereby preventing nutrient uptake and slowly starving them to death. The fungus kills not only jarrah trees but also many other species which live in the forest and has a similar result to partial clearing in that it causes increased water salinity.

Jarrah dieback spreads by movement of infected soil or gravel and it can also be carried in running water. Virtually all of man's activities in the forest areas contribute to the spread of the disease. Control can only be achieved by reducing artificial spread. Unaided *P. cinnamomi* can move less than a few centimetres a year uphill or on a flat surface. However, the fungus can survive and may be carried in less than one gram of moist soil, an amount sufficient to initiate a new diseased area. Once established, downward spread is rapid and deadly.

HOW ARE THE CATCHMENTS MANAGED?

Catchment management is the process whereby all resources in the area are assessed and apportioned as fairly as possible to the various and often conflicting demands.

The aim is to allow ideal use of catchment land consistent with the supply of potable water. This is known as multiple use and, in the case of the Darling Range, includes timber production, recreation, tourism and education, bee keeping, orchards and light agriculture.

Management of the catchment supplying Perth is done jointly by the Metropolitan Water Board and the Forests Department although many other government departments and the CSIRO are involved. The task is complex and careful planning and control are needed to ensure that human activities do not pose risks to domestic and irrigation water supplies. Human activity causes biological pollution of water by potential introduction of pathogenic viruses or bacteria. Evidence of management in practice can be seen in the large areas of State Forest which have been quarantined to prevent dieback spread. Rangers and foresters are present in many areas and people who break forest regulations or pollute the waters can be prosecuted.

Protection of the catchment areas has become increasingly difficult to achieve.

The co-operation of everyone who uses them, for work or recreation, is essential if they are to be conserved for future generations.

PERTH'S CATCHMENT AREAS AND DAMS

Dam	Date Constructed	Catchment Area Km^2	Volume $m^3 \times 10^6$
Victoria	1891	37	0.9
Mundaring	1902	1470	77.0
Churchmans Brook	1926	16	2.2
Canning	1940	789	93.4
Serpentine Pipehead	1957	28	3.9
Serpentine	1961	664	173.4
North Dandalup	1970	151	17.1
Lower Helena	1971	113	0.1
South Dandalup	1978	311	208.2
Wungong	1979	134	60.0
Other catchments yet to be harnessed	?	1300	–
Total		5013	636.20