

MANAPOURI

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The national controversy over Lake Manapouri has aroused public interest to an extent never seen in N.Z. before. A lot has been said already and here is someone saying some more! However, what I am trying to do here is to present the salient features as I see them. A lot of conflicting statements have been made and a lot of information has yet to be divulged. However, there are some aspects which can be judged safely on the information available.

The Manapouri Power Scheme. Water from Lake Te Anau, 670 ft. above sea level, flows by way of the Upper Waiau River into Lake Manapouri at 583 ft. and thence into the Waiau R. to the sea past Tuatapere on the South coast of Southland. On the way it is joined by water from the Mararoa R. and from Lake Monowai. In 1960 the Government signed an agreement with Comalco (Consolidated Zinc Ltd.) which gave this firm the sole rights to harness the water from Lakes Te Anau and Manapouri for power for an aluminium smelter to be built at Bluff. A dam near the confluence of the Waiau and Mararoa Rivers would convert the two lakes into one. In 1963 Comalco announced that they could not finance construction of both smelter and power scheme and a new agreement was signed under which the Government would build the necessary dams, tailrace and power house and sell electricity to Comalco. In 1966 the agreement was revised slightly, a main alteration being the reduction of the intended rise in lake level for Manapouri from 90 ft. to 37 or more likely 27 ft. above present mean level. This was a consequence of discovery that the rock at the Mararoa junction was too rotten to take a high dam.

The Power Scheme involves preventing the lake waters from flowing to the sea by their natural outlet, and diverting them instead to the West Coast by way of a tunnel from the west arm of the lake. The water plunges almost to sea level to seven huge generators in a power house in the bowels of the earth and then flows  $6\frac{1}{4}$  miles in a tunnel to Deep Cove at the head of Doubtful Sound. Four generators are operating already and when complete this magnificent engineering achievement will dwarf all others in N.Z. in size and cost (about \$200 million).

Without raising Lake Manapouri at all, the new power station will generate, from its seven turbines, 640 megawatts (MW) of electricity at peak output. By raising the lake 27 ft. 690 MW can be generated, an increase of 50 MW or 8%. This extra amount is needed to guarantee Comalco a continuous supply of 480 MW from the Manapouri power station. The extra hydrostatic "head" and the extra storage, plus increased storage in Te Anau obtained by a low dam on the upper Waiau, will take care of fluctuations in water flow into the lakes, especially in abnormally dry seasons (about one in every 15 years.) For much of the time there will be a surplus of power, up to 160 MW (640-480), some or all of which can

go into the National Grid. A potential of 690 MW is only needed for a small proportion of the operating time, to guarantee a continuous supply of 480 MW. If Manapouri is not raised the Government would have to supply any deficit from an alternative source. It may, after 1976, according to one interpretation of the agreements, have to supply some power in excess of 480 MW to Comalco (for them to resell?; or supply to a subsidiary company?)

What will this compensation cost, if Manapouri is not raised and Comalco agrees to deficiencies being made good from the National Grid? If the non-Manapouri power comes from a hydro station, either a new small one or as part of the output from a large one, the annual cost is calculated from interest on the capital cost of the new scheme. A coal, oil or gas-fired station costs only a fraction of the amount needed for a hydro station, but in addition to the (smaller) interest there is the cost of the fuel to be burnt. (Because water costs nothing and fuel is expensive, "heat power" stations are used mainly to provide peak demands, while hydro stations take care of the "base load")

The Minister of Works has given an estimate of  $\$3\frac{1}{2}$  M. per annum for power from an alternative source. An ex-Electricity Dept. senior engineer, using official figures, has calculated  $\$1\frac{1}{2}$  M. per annum. Neither figure takes into account the Government "profit" from power available in excess of 480 MW for a lot of the time. Nor do they allow for an ever-increasing income from tourism to the district - New Zealanders as well as overseas visitors. Thus there may be very little extra cost in guaranteeing Comalco's full entitlement.

Comalco must have its power. It is legally entitled to 480 MW of continuous supply for the smelter. Conservationists are NOT trying to prevent establishment of the smelter at Bluff. The new industry is probably of considerable economic benefit to the nation.

Can the Government readily find the extra 50 MW if Manapouri is not raised? The answer is certainly, yes. It must find 2000 MW of new power by 1976 (power needs double every 10 years) and if it cannot find a mere 2 $\frac{1}{2}$ % extra, there is something wrong with its planning. Some of the 2000 MW will come from hydro sources such as the Waitaki R. scheme, some will come from fuel-powered stations. Maui gas may well provide a ready indigenous source of fuel, delaying the need for an atomic power station by several years. (Incidentally air pollution can be minimised by design features for fuel burning stations).

The extra 50 MW may well be found from the Manapouri power station itself if the suggested Sunnyside dam site below the inlet from Lake Monowai proves feasible. This would provide extra storage, without raising L. Manapouri, by formation of a lake in much the same way as those of the Waikato R. were formed. Farmland with pasture and scrub and very little bush would be flooded. Unsightly damage would be minimal and apparently local

farmers are not antagonistic to such a scheme. Water from L. Monowai would join that of Manapouri and if a high dam were built at Monowai the former beauty of the latter lake would be restored if bush clearing on a more modest scale than Manapouri was found to be practicable. At least Monowai could not be made more unsightly than at present with its fringe of petrified dead trees, unfelled when the lake was raised 7 feet many years ago.

Will raising Manapouri really create an unsightly mess? There is no doubt that it will. Government statements talk glibly about "shore clearing and beach relocation". There is less publicity for the fact that their plans fall far short of the standards laid down by the National Parks Board. They will not attempt to clear slopes with an angle greater than 35° - the greater part of the 125 mile shoreline! Trees on the remaining shoreline will be cut to 9 inches above ground level unless this proves to be too difficult (or too tiring for the operators?) when they may be left standing 3 ft. above ground level. Nine-inch stumps, with topsoil washed away, will be an eyesore in any case. A lot of the ground in the flatter valley floors is too swampy to allow access for machinery. Hope Arm on the south shore will provide a two mile unsightly graveyard of trees and stumps. As for relocating beaches .....! The present beaches are our natural wave-cut platforms where seasonal fluctuations of water level prevent plant colonisation and keep the sand clean. There will be no geological structures to maintain beaches 27 ft. up the slopes.

Man cannot create an aesthetic shoreline at a new, higher level. Unfortunately man's eyes cannot avoid an unsightly foreshore in attempting to admire the magnificent bush and snow-capped mountains above. I am trying to assess the Manapouri issue without emotional argument, but I cannot avoid scathing comment on the naive official promises to recreate an acceptable new shoreline. Has man succeeded at Waikaremoana where increased hydrostatic pressure resulting from attempts to raise the level "blew" the outlet, causing the lake to leak so much that it is now 56 ft. below natural level, with a belt of deep mud - and many old stumps - around the periphery. Has man fulfilled his promises at Buttle Lake in British Columbia? Mr. P.H.C. Lucas, Chairman of the N.Z. National Parks Authority, who visited it recently has described his distress at what he saw. Has the American public accepted plans to drown the shore of Yellowstone Lake, flood part of the Grand Canyon, the Yampa River in Dinosaur National Monument and the North Fork of the Clearwater in Glacier National Park? No. - the U.S. Government has abandoned all these, and other similar hydro plans.

If Manapouri and Te Anau are not raised there will still need to be intelligent management of Lake level fluctuations to avoid killing the existing fringe of trees around the lake. These trees have tolerated occasional high floods in the past but prolonged inundation at high flood level would be lethal.

Can we afford not to raise the level of Lake Manapouri? Even if the outside estimate of \$3½ M. proves to be correct, (and we would argue that it seems to be based on an unbalanced interpretation of the data), this is still not much more than \$1 per head per annum.

This is a small price to pay for (1) keeping intact what is undoubtedly one of the world's most beautiful lakes (2) avoiding a precedent whereby a National Park is grossly despoiled for the sake of a relatively small economic advantage.

Are National Parks not inviolate? It is true that the National Parks Act of 1952 set out "to preserve in perpetuity, for the benefit and enjoyment of the public, areas of N.Z. that contain certain scenery of such distinctive quality or natural features so beautiful or unique that their preservation is in the national interest" ... and that "they shall be preserved as far as possible in their natural state."

However, our National Parks are NOT inviolate. The Ministers of Mines and Works can authorise a scheme which will permanently mar a Park if they deem it, in their own judgement, to be in the public interest. The National Parks Act can be overridden by powers granted in other Acts. This situation must be remedied, urgently.

The Nature Conservation Council as it is constituted, has been shown to be ineffectual in influencing Government. It has tried since 1963 to persuade Government to change its mind about raising the level of L. Manapouri. If Government does eventually change its mind, it will be because, in the words of the Minister of Works, public opinion is stronger now than it was a few years ago. We should not have to wait for such a massive, nationwide reaction by the public before Government recognises that National Parks and other reserves have a value beyond price.

For the sake of all worthwhile conservation issues of the future we cannot afford to lose the present battle to save Manapouri.

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