

Manapouri-Te Anau Development Act 1963

Operating Guidelines for Levels of Lakes Manapouri and Te Anau

Pursuant to section 4A of the Manapouri-Te Anau Development Act 1963, I, Pete Hodgson, Minister of Energy, based upon the recommendations of the Guardians of Lakes Manapouri and Te Anau and of Meridian Energy Limited, hereby give the following notice of the operating guidelines for the levels of Lakes Manapouri and Te Anau aimed to protect the existing patterns, ecological stability, and recreational values of their vulnerable shorelines and to optimise the energy output of Manapouri power station.

Notice

1. Title and commencement—(1) This notice may be cited as the Manapouri-Te Anau Development Act (Operating Guidelines) Notice 2002.

(2) This notice shall come into force on its publication in the *New Zealand Gazette*.

2. Application and interpretation—(1) This notice applies to Lakes Manapouri and Te Anau.

(2) In this notice, unless the context otherwise requires:

“Duration” means the number of continuous days any of the Lakes were within a particular range of level specified within the High or Low Operating Ranges.

“High Operating Ranges” are those set out in clause 5 of this notice.

“Interval” means, in relation to either of the Lakes, the number of continuous days that a Lake was below a particular range of level specified for the High Operating Ranges for that Lake.

“Lakes” means Lakes Manapouri and Te Anau.
“Level” means height, in metres, above mean sea level.

“Low Operating Ranges” are those set out in clause 6 of this notice.

“Main Operating Ranges” are those set out in clause 4 of this notice.

“Maximum duration” means, in relation to any of the Lakes, the number of continuous days that a Lake may

be within a particular range of level specified for the High or Low Operating Ranges, and in relation to the High Operating Ranges, subject to the specified minimum interval.

“Minimum interval” means the number of continuous days that should elapse from either of the Lakes moving below a particular range of level, until that Lake returns within that range of level.

“Parties” means the Guardians of the Lakes and Meridian Energy Limited.

“Specified ratio” means the ratio derived from dividing the minimum interval by the maximum duration, and applies only to the High Operating Ranges.

3. Lakes management—The parties recognise three separate operating ranges of levels for each of the Lakes within which Meridian Energy Limited may operate, being Main, High and Low, as set out in clauses 4, 5 and 6 of this notice.

4. The Main Operating Ranges—(1) The Main Operating Ranges, within which Meridian Energy Limited shall endeavour to maintain continuous variation, are:

- (a) for Lake Manapouri, levels from 176.8m to 178.6m; and
- (b) for Lake Te Anau, levels from 201.5m to 202.7m.

(2) Meridian Energy Limited shall, for each of the lakes, aim to achieve annual mean levels within the applicable Main Operating Ranges as specified in this notice.

5. The High Operating Ranges—(1) Meridian Energy Limited shall use its best endeavours to:

- (a) not exceed the maximum durations; and
- (b) achieve the specified ratio in relation to the ranges of level set out in subclause (2) of this clause, where the actual interval (in days) between the Lake moving below a particular range of level and returning to within that range of level is divided by the actual duration (in days) that the Lake was originally within that range of level.

(2) Subject to subclause (3) of this clause, the High Operating Ranges are:

- (a) for Lake Manapouri, above 178.6m, in accordance with the following maximum durations, minimum intervals, and specified ratios for the ranges of level set out:

<i>Level (m)</i>	<i>Maximum Duration</i>	<i>Minimum Interval</i>	<i>Specified Ratio</i>
------------------	-------------------------	-------------------------	------------------------

At 180.5	1	100	100.00
Above 180.4	3	100	33.33
Above 180.1	9	100	11.11
Above 179.8	22	80	3.64
Above 179.5	35	40	1.15
Above 179.2	44	40	0.91
Above 178.9	99	20	0.20
Above 178.6	119	20	0.17

- (b) for Lake Te Anau, above 202.7m, in accordance with the following maximum durations, minimum intervals, and specified ratios for the ranges of levels set out:

<i>Level (m)</i>	<i>Maximum Duration</i>	<i>Minimum Interval</i>	<i>Specified Ratio</i>
At 204.3	7	100	14.29
Above 204.2	10	100	10.00
Above 203.9	15	60	4.00
Above 203.6	22	30	1.36
Above 203.3	39	30	0.77
Above 203.0	65	30	0.46
Above 202.7	125	20	0.16

(3) Where the ratio derived from dividing the interval between the lake level moving below a particular range of level and returning to that range of level by the duration that the lake was in that range of level immediately prior to the interval:

- (a) results in a ratio greater than or equal to the specified ratio, then the guidelines are deemed to be complied with.
- (b) results in a ratio less than the specified ratio, then subject to subclause (4) of this clause, the interval occurring after a particular duration shall be added to that duration along with the duration occurring after that interval, in order to determine the duration for which the specified ratio must be achieved.

(4) The period of duration within any range of level, including accumulations as provided for in paragraph (b) of subclause (3) of this clause, shall not exceed the relevant maximum duration.

(5) The parties record that:

- a) High Operating Range guidelines were reviewed in 2001 and are based on the mean of the three extreme events during the period of natural and synthetic record from 1933 to 2000.
- b) the 1988 flood was excluded from this review because of its damaging high levels and extended

duration. Extreme natural floods have occurred historically, e.g. 1988: Lake Te Anau 205.41m, Lake Manapouri 182.15m. It is accepted that guideline breaches may occur on rare occasions despite the best endeavours of the power station operator.

6. The Low Operating Ranges—(1) Subject to subclause (2) of this clause, the Low Operating Ranges are:

- (a) for Lake Manapouri levels from 175.86m to 176.8m, with an absolute minimum level of 175.86:

<i>Level (m)</i>	<i>Maximum Duration</i>
Below 176.8	107
Below 176.5	66
Below 176.2	22
At or below 175.9	5

- (b) for Lake Te Anau from 200.86m to 201.5m, with an absolute minimum level of 200.86m:

<i>Level (m)</i>	<i>Maximum Duration</i>
Below 201.5	88
Below 201.3	46
Below 201.1	21

(2) For the purposes of the Low Operating Ranges outlined in subclause (1) of this clause, Meridian Energy Limited shall use its best endeavours to:

- (a) not exceed the maximum durations for the individual ranges of levels specified;
- (b) avoid lake levels below 201.1m for Lake Te Anau and below 176.2m for Lake Manapouri during the equinoctial periods (March, April, October and November);
- (c) not exceed, in any continuous period of 365 days, twice the maximum duration specified for any particular range of level; and
- (d) ensure the rates of drawdown do not exceed the natural rates of drawdown averaged over four days, being 0.05m per day for Lake Manapouri and 0.03m per day for Lake Te Anau.

(3) The parties record that:

- (a) in the period of natural record, the level of Lake Manapouri has been below the absolute minimum level of 175.86m; and
- (c) these guidelines are based on the mean of three extreme events during the period of natural record and may result in low ranges of level being

experienced more often than would have occurred naturally

7. Gate opening and closing procedures—(1) The Parties have agreed upon and adopted gate opening and closing procedures which are designed amongst other things:

- (a) in the case of the Lake Te Anau Control structure, to reduce or eliminate scour action on the upper Waiau River banks, to facilitate repair following periods of extremely high flow, and to facilitate the successful spawning of salmonids; and
- (b) in the case of the Lake Manapouri Control structure, to reduce potentially dangerous increases in river flow downstream of the gates, and to bypass flood flows from the Mararoa River in such a manner as to prevent dirty debris-laden water from entering Lake Manapouri.

(2) It should be noted that the procedures referred to in subclause (1) of this clause are modified from time to time by agreement between the Parties.

8. Benchmarks—For the purposes of this notice:

- (a) the level of Lake Te Anau at any time shall be determined by reference to the Land Information New Zealand Benchmark Z58, New Zealand map grid co-ordinates (5518335) metres north (2096815) metres east, which is adjacent to the lake water level recorder and staff gauge, which benchmark shall be deemed to represent a height 205.161 metres above mean sea level; and
- (b) the level of Lake Manapouri at any time shall be determined by reference to the Land Information New Zealand Benchmark Z47, New Zealand map grid co-ordinates (5506094) metres north (2091334) metres east which benchmark shall be deemed to represent a height of 208.910 metres above mean sea level.

9. Consequential revocation—The notice entitled “Manapouri-Te Anau Development Act 1963” dated 14 April 1993 and published in the *New Zealand Gazette*, 29 April 1993, page 1084, is hereby consequentially revoked.

igned at Wellington this 12th day of November 2002.

P. HODGSON, Minister of Energy.

Note: The Guardians and Meridian Energy Limited may review these guidelines from time to time with a view to recommending that the Minister promulgate new guidelines.