Notice Under Manapouri - Te Anau Development Act 1963— Operating Guidelines for Levels of Lakes Manapouri - Te Anau

It has been agreed between the Crown and the Guardians of Lakes Manapouri and Te Anau that the following guidelines shall apply to the operation for hydro-electic purposes of Lakes Manapouri and Te Anau and the associated power station.

1. The parties recognise 3 operating ranges for each lake namely:

Main, high and low as set out in the tables below.

In the main operating range the Crown may operate within the levels set out but will endeavour to maintain continuous variations within that range.

In the high and low operating ranges the Crown will use its best endeavours to stay within the durations and intervals shown in the relevant table at the levels set out.

(a) Main Operating Range

Lake Manapouri Lake Te Anau

From 176.8 to 178.6 m (580 to From 201.5 to 202.7 m (661 to 586 ft) 665 ft)

(b) High Operating Range

Lake Manapouri

Above 178.6 metres

|                             |    | Max. Duration<br>(Continuous Days) | Min. Interval Between<br>Floods to this level<br>(Continuous Days) | Interval/Duration*<br>Ratio |
|-----------------------------|----|------------------------------------|--|-----------------------------|
| Elevation (Metres)          |    |                                    |  |                             |
| At 180.5                    |    | 1                                  | 100  | 100.0                       |
| Above 180.4 and below 180.5 | •• | 3                                  | 100  | 33.0                        |
| Above 180.1 and below 180.4 | •• | 9                                  | 100  | 11.0                        |
| Above 179.8 and below 180.1 | •• | 22                                 | 80   | 3.6                         |
| Above 179.5 and below 179.8 | •• | 35                                 | 40   | 1.1                         |
| Above 179.2 and below 179.5 | •• | 44                                 | 40   | 0.9                         |
| Above 178.9 and below 179.2 | •• | 99                                 | 20   | 0.2                         |
| Above 178.6 and below 178.9 | •• | 119                                | 20   | 0.2                         |
| ** * * * *                  |    |                                    |  |                             |

### \*Periods less than specified in table

1. If the ratio between "interval" and "previous duration" for any particular event equals or exceeds the ration in the table, the requirements of the guidelines are complied with.

2. If the ratio so calculated is less than the ratio in the table, then for the purpose of compliance, the duration is considered to include the subsequent interval.

3. Periods of duration, including subsequent intervals if appropriate, are accumulated until the required ratio is achieved.

4. Accumulated periods of duration, as defined in paragraph 3 should not exceed the permissible maximum.

## Lake Te Anau

Above 202.7 metres

|                                       |     | Max. Duration<br>(Continuous Days) | Min. Interval Between<br>Floods to this level<br>(Continuous Days) | (Interval/Duration)*<br>Ratio |  |
|---------------------------------------|-----|------------------------------------|--|-------------------------------|--|
| Elevation (Metres)                    |     |                                    |  |                               |  |
| At 204.3                              | ••  | 1                                  | 100  | 100.0                         |  |
| Above 204.2 and below 204.3           |     | 3                                  | 100  | 33.0                          |  |
| Above 203.9 and below 204.2           | ••  | 10                                 | 60   | 6.0                           |  |
| Above 203.6 and below 203.9           | ••  | 22                                 | 30   | 1.4                           |  |
| Above 203.3 and below 203.6           | ••• | 39                                 | 30   | 0.8                           |  |
| Above 203.0 and below 203.3           | • • | 65                                 | 30   | 0.5                           |  |
| Above 202.7 and below 203.0           | ••  | 125                                | 30   | 0.2                           |  |
| *Periods less than specified in table |     |                                    |  |                               |  |

To be treated as for Lake Manapouri.

# (c) Low Operating Range Lake Manapouri

## 175.86 metres to 176.8 metres

|                             |    | Max. Duration<br>(Continuous Days) | Annual Frequency |
|-----------------------------|----|------------------------------------|------------------|
| Elevation (Metres)          |    |                                    |                  |
| Below 176.8 and above 176.5 |    | 105                                | 4                |
| Below 176.5 and above 176.2 | •• | 65                                 | 2                |
| Below 176.2 and above 175.9 | •• | 52                                 | 2                |
| At 175.86                   |    | 25                                 | <1*              |

\*Exceptional circumstances only with best endeavours to avoid equinoxial periods (March, April, October and November).

#### Lake Te Anau

From 200.86 to 201.5 metres

| Elevation (Metres)          | Max. Duration<br>(Continuous Days) | Annual Frequency |
|-----------------------------|------------------------------------|------------------|
| Below 201.5 and above 201.2 | <br>80                             | 2                |
| Below 201.2 and above 200.9 | <br>55                             | 2                |
| At 200.86                   | <br>1                              | <1*              |

\*Exceptional circumstances only with best endeavours to avoid equinoxial periods (March, April, October and November).

In the main operating range the aim will be to achieve as far as practicable a long term mean value within the range 178.1 m (584.3 ft) to 177.7 m (583 ft) for Manapouri and 202.2 m (663.4 ft) to 201.8 m (662.1 ft) for Te Anau as five year running means and on an annual basis not less than 177.2 m (581.4 ft) for Manapouri and 201.6 m (661.7 ft) for Te Anau. Operation in the low ranges should not exceed natural rates of draw down, namely 0.05 m (0.2 ft) per day for Lake Manapouri and 0.03 m (0.1 ft) per day for Lake Te Anau, both being averaged over four days.

2. (a) The gate opening and closing procedures adopted for the Te Anau Control structures are designed amongst other things to reduce or eliminate scour action on the upper Waiau river banks and to facilitate repair following periods of extremely high flow, and these may be modified from time to time based on experience.

(b) The gate opening and closing procedures adopted for the Manapouri Lake Control structure are designed amongst other things 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 the dirty debrisladen water from entering Lake Manapouri.

3. For the purposes of the Manapouri-Te Anau Development Amendment Act 1981.

(a) The level of Lake Te Anau at any time shall be determined by reference to the Lands and Survey Benchmark Z58, National grid co-ordinates (176 284) yards east (319 170) yards north, which is adjacent to the lake water level recorder and staff gauge. The benchmark shall be deemed to represent a height 205.127 metres above sea level.

(b) The level of Lake Manapouri at any time shall be determined by reference to the Lands and Survey Benchmark Z47, National grid co-ordinates (170 051) yards east (305 873) yards north. The benchmark shall be deemed to represent a height of 208.910 metres above sea level.

Dated at Wellington this 16th day of November, 1981. W. F. BIRCH, Minister of Energy.