

## APPENDIX D

## ANNUAL REPORT OF THE CHIEF ELECTRICAL ENGINEER

The CHIEF ELECTRICAL ENGINEER to the Hon. the MINISTER OF WORKS

SIR,—

In conformity with the provisions of section 15 of the State Supply of Electrical Energy Act, 1917, I have to report on the development of electric power in the Dominion for the year ended 31st March, 1944, as follows:—

At the close of the year the total capital outlay was £23,610,351, being expended on the Schemes as under—

|                           | In Operation. | Not in Operation. | Total.     |
|---------------------------|---------------|-------------------|------------|
| North Island System .. .. | 13,259,553    | 1,591,151         | 14,850,704 |
| South Island System .. .. | 7,423,574     | 505,587           | 7,929,161  |
| Cobb River Scheme .. ..   | ..            | 830,486           | 830,486    |
| Totals .. ..              | 20,683,127    | 2,927,224         | 23,610,351 |

In the North Island the difficulties and delays in procuring more generating-plant are continuing to cause grave concern. Standby plants must be run at capacity for long periods to relieve the main plants, and in consequence there is no plant margin from undue overload against breakdown.

The problem which has arisen out of the shortage is twofold: the maximum demand at the peak hours of use must not be allowed to exceed the overload capacity of the generating-units, and at all times throughout the year power-consumption generally must be restricted in order to conserve coal, oil, and water supplies at the respective generating-stations. For some time, therefore, the use of electric radiators in business premises has been prohibited between the hours of 4 p.m. and 6 p.m. from April to September inclusive, and no electric radiator may be bought or sold without a permit. Various classes of lighting inside and outside premises are restricted or wholly prohibited. With new installations no permit will be granted unless it is shown that electric power is necessary for the prosecution of the war or to increase primary production. Permits, however, are granted for all new housing. As a prolific cause of waste is the electric hot-water service supplied at a fixed charge for power, the metering of the supply to these services is being vigorously undertaken.

## NORTH ISLAND ELECTRIC-POWER SYSTEM

1. *Capital Outlay.*—Some progress was made with Karapiro Station and extensions to the system generally, but, as in previous recent years, the supply of man-power being restricted progress was not as rapid as desired.

2. *Financial Results.*—From the preliminary figures to hand it is apparent that the various restrictions introduced are affecting the natural growth of load and retarding the normal revenue increase. As in last financial year, after the payment of income-tax, &c., there will be insufficient to meet the statutory appropriation for sinking fund.

3. *System Operation.*—The maximum half-hourly load was 272,200 kW., and occurred at 18.00 hours on 26th May, 1943, an increase of 5.6 per cent. on that of last year. The units sold were 1,321,333,376, as compared with 1,259,905,541 for the previous year, an increase of 4.8 per cent.

Approximately 48,200 tons of coal were burnt at King's Wharf. At Evans Bay approximately 19,400 tons of coal and 13,550 tons of oil were burnt. The reserve stocks on hand at both stations on 31st March were approximately 2,500 tons, as compared with 16,000 on the same date last year.

4. *Construction.*—Arapuni: Nos. 5 and 6 draught tubes were welded, and the erection of the draught tube and scroll casing for No. 6 turbine is in progress.

Karapiro: The diversion-tunnel gate was completed and the Waikato River was diverted through the tunnel in September. Some equipment for permanent installation has arrived.

Mangahao: Two cottages were erected at the headworks.

Tuaiti: Outdoor station was extended to accommodate the second line from Piripaua.

Piripaua: The installation of the second machine was completed and placed on commercial load during the year.

Taupo Control: This work was continued during the year.

Substations: A new substation was completed at Belmont (5,000 kVA, 50/11 kV.). Temporary substations at Te Puke and Ohura were put into service. The latter substation will supply power to a new Government coal-mine. The transformer capacity at several substations was increased to keep pace with the growing demand and new switchgear installed. Cottages were erected at Edgecumbe, Ngongotaha, Waihou, and Stratford. The new substation at Central Park (Wellington) is nearing completion.