

Negotiations are in hand with the Timaru Borough Council and other local authorities and power-users in South Canterbury. It is estimated that there is a load in sight of 1,000 to 2,000 h.p. in this district at rates which will prove remunerative to the Department and advantageous to the consumers. This line, if constructed, will have a length of 100 miles, and will thus exceed any other transmission-line in the Southern Hemisphere.

The present load, together with the contracts entered into, amount to 4,000 h.p., and allowing 1,000 h.p. for the ordinary development of the City of Christchurch, a total of 5,000 h.p. has to be provided for within a year's time. Inasmuch as the sales-capacity of our present plant is only 4,000 h.p., it became necessary to procure an addition to the generating plant, and an order has been placed for a 2,000 h.p. turbine and generator, which will increase the plant-capacity for the supply of power, leaving one unit of 2,000 h.p. as stand-by.

Regarding the future, it is evident that a further addition to the generating plant will shortly become necessary to provide for the normal growth of the existing consumers and the requirements of the new customers.

The following is a statement of the expenditure up to the 1st March, together with an estimate of future expenditure upon generating plant and distribution up to the limit of the present head-works, also the approximate order of expenditure:—

Number of units of generator plant	3	4	5	6
Date of attaining each stage ..	1915	1917	1919	1921
Total capacity of power-house plant	6,000 h.p.	8,000 h.p.	12,000 h.p.	16,000 h.p.
Available capacity of plant ..	4,000 h.p.	6,000 h.p.	8,000 h.p.	12,000 h.p.
Capital investment	£289,980	£335,850	£367,620	£397,920
Additional for South Canterbury ..	..	£20,000	£40,000	£62,000
Total	£289,980	£355,850	£407,620	£459,920

It will be seen that the capital expenditure and commitments up to the 31st March last amounted to £289,980, and that a further expenditure of £169,940, spread over six years, is required in order to fully utilize the present headworks and to adequately supply the district within reach of the power-station at Lake Coleridge. The present headworks and buildings at Lake Coleridge have a capacity of 16,000 h.p., the pipe-lines of 8,000 h.p., and the turbines and generating machinery have a capacity of 6,000 h.p., whilst the transforming-apparatus and transmission-lines have a capacity of 12,000 h.p.

The present sales-capacity of the generating plant is 4,000 h.p., after providing one unit as stand-by, whilst the ultimate sales-capacity is 12,000 h.p.

The present stage is obviously a preliminary and immature stage, and no profits can be expected. It is anticipated, however, that with the installation of the fourth unit the plant will earn working-expenses and pay interest charges, and possibly leave a small surplus. It is confidently anticipated that the fifth-unit stage, with a sales-capacity of 8,000 h.p., will meet all working-expenses, pay all capital charges, and leave a small surplus after contributing to a depreciation fund. The sixth-unit stage, with a sales-capacity of 12,000 h.p., will yield a substantial surplus, which will be employed towards paying off interest paid out of capital during construction, also losses on working during the preliminary stages, after which the surplus can be applied towards making a reduction in the charges for electricity.

Comparing the expenditure to date with the estimated revenue, the original estimate at the present stage of development of the works was £259,220, compared with an actual expenditure of £289,980, showing an excess of £30,760. The two expenditures, however, are not directly comparable, because, for reasons connected with the design of the plant and continuity of supply, double the capacity of transformers originally estimated on have been installed, whilst the actual expenditure also includes interest paid out of capital, and a debit balance against operation.

Comparing the actual expenditure with the estimates on the *pro rata* basis, I am glad to state that the original estimate has been fully borne out, and indications point to the business being more profitable than originally anticipated.

The operation of the plant up to the present has been extremely satisfactory, and I can confidently assert that no power plant of the kind when first put into operation encountered fewer troubles and difficulties. There has been no trouble or hitch other than a few interruptions on the transmission-line, mostly due to malicious damage. A certain amount of interruption is anticipated on long transmission-lines until the weak links in the chain have been eliminated. Since going into continuous service on the 1st March there has been one failure, when the plant was shut down from 8 o'clock at night until 6 or 7 o'clock the next morning. This was due to a fault in one of the transmission-lines; whilst the delay in restoring power on the line is accounted for by the fact that the second line was under repair at the time. Four other failures have since occurred, but these were of short duration, the interruptions varying from half a minute to fifteen minutes on one occasion.

We have been very successful in organizing the staff, and very fortunate in our choice of men. The normal operation of the staff is now under full control, and the arrangement for dealing with a failure of the transmission-line is now complete, and the organization is gradually being brought to a state of perfection. Great credit is due to the staff for the manner in which they have carried out their duties, and particularly for the way in which they have responded in cases of emergency, such as the breakdown of the transmission-line. Three members of the power-house staff at Lake Coleridge have resigned in order to join the Expeditionary Forces, whilst two others have retired to take up positions elsewhere.