

to suit the requirements of Canterbury, when regarded from a national standpoint, the initial development should have been at least 20,000 h.p. instead of 12,000 h.p.; so that on a population and industrial basis an initial development of 30,000 h.p. for the Auckland district is not too optimistic. Further than this, it seems probable that Arapuni or some other source on the Waikato is destined to become a main source of supply for the North Island, in which case the argument that the cost of developing Arapuni for anything less than 30,000 h.p. is unduly expensive has no weight at all.

In answer to the second alleged disadvantage—viz., that the chief centre of the population to be supplied (Auckland) is about twice as far away from Arapuni as Lake Coleridge is from Christchurch—this is so; but on the other hand the power to be transmitted is greater, whilst there is a good general market on the way, and some concentrated industrial loads to be supplied, whilst there is at least one locality destined to become a large industrial centre. As a result, power can be supplied in Auckland at the same prices as in Christchurch, despite the alleged disadvantages; and I doubt if this will come as bad news to the people of Auckland.

Again, although Arapuni is some distance from Auckland, which is about the centre of the population of the Auckland Province, it is not far from the centre of the population of the North Island considered as a whole; and, as the power to be obtained from this source is large and capable of supplying a larger area than the Auckland Province, it is well placed when regarded from a national standpoint.

*Paragraphs 16, 17, and 18.*

The argument advanced here is an extraordinary one—viz., if the Coleridge system was estimated to cost £23 per horse-power, and has now actually cost £45 per horse-power, or about double, therefore the Arapuni scheme, if estimated to cost £40 per horse-power, will cost £80 per horse-power.

The estimate of £23 per horse-power covers a full development of headworks, whilst the supply is confined to Christchurch, in a manner similar to the supply to Dunedin from Waipori; whereas the expenditure of £45 per horse-power includes expenditure on headworks which are as yet only partly utilized, also expenditure on a system of distribution to the suburban and country population, also expenditure on account of retail business in certain areas. The Arapuni scheme also provides for a system of distribution in the Auckland Province, and the estimate is based upon the actual expenditure on a similar system supplied from the Lake Coleridge works.

*Paragraphs 19, 20, and 21.*

The purpose of this is to prove that power cannot be delivered remuneratively to Auckland at less than 0·8d. per unit.

The argument employed is as follows: The charge for a supply from Lake Coleridge in 1917, instead of being 0·427d. per unit, should have been 0·5d. per unit in order to make the undertaking pay its way, and as the capital cost of supplying Auckland must be, according to the arguments advanced in the preceding paragraph, £80 per horse-power against £45 per horse-power expended on the Coleridge undertaking, it follows that the average price of the supply from Arapuni must be at least 0·8d. per unit in order to make the undertaking remunerative.

The conclusion is founded upon the assumption that the Arapuni scheme will cost £80 per horse-power; but even then the conclusion is not sound. The capital charges on the basis of 7 per cent. per annum on £80 will amount to £5·12 per horse-power per annum. The working-expenses would certainly not exceed £30,000 per annum for a sale of 30,000 h.p., which is at the rate of £1 per horse-power per annum, making a total of £6·12 per horse-power per annum to cover all charges. This, on the basis of a 50-per-cent. load factor, usual in hydro-electric plants, is equivalent to 0·36d. per horse-power hour, or 0·483d. per kilowatt-hour in the average, compared with which the figure 0·8d. per unit seems to be a wild guess.

*Paragraph 22.*

This reads as follows: "For a partial development the price would require to be very much greater [than 0·8d. per unit], or else there would be a very large annual deficit."

Even on the assumption of a capital cost of £80 per horse-power, I have shown that the price per unit does not need to be 0·8d. per unit to make the scheme self-supporting. The statement that for partial development whilst the business is being built up there would be annual deficits is a self-evident one, and inevitable in some classes of business, amongst them being power-supply undertakings, whether the power is derived from fuel or from head of water. Nevertheless, this disadvantage does not militate against the rapid growth and expansion of power-supply undertakings. Evidently deficits of the early years of the undertaking are of little account in comparison with the economic gain to the community.

*Paragraphs 23 and 24.*

It is pointed out in these paragraphs that coal is cheaper in Auckland than in Christchurch, and that in consequence the cost of generating power by steam is less in the Auckland district than in the Christchurch district, and that this circumstance will militate against the success of the Arapuni scheme.

The argument that because coal is cheap there is no room for a general power-supply undertaking, or that it militates against its success, is disproved by the facts. It is within my own knowledge and experience, for instance, that coal-mines are the most remunerative consumers on a power-supply system, and also the most willing and ready users. Yet one would be well justified in arguing beforehand that an electric-supply undertaking generating electricity by means of a steam plant would have no prospects at all in a mining district. The contrary is, however, the fact, and in this connection a reference to the Coal Conservation Sub-committee of the Reconstruction Committee of Great Britain is interesting. It is stated on page 27 thereof that collieries having an output of 20,000,000