

The total capital expenditure is estimated at £7,303,042, including interest during construction, working capital, and a sum to enable financial assistance to be afforded to power-users and local authorities. It is pointed out that the whole expenditure is recoverable in from six to seven years in coal saved alone, productive power is increased and economy secured, country districts settled, and closer settlements generally accelerated, whilst at the same time the undertaking is self-supporting after a reasonable interval for development and growth.

On the basis of $7\frac{1}{2}$ per cent. per annum the capital charges will amount to £547,728, and working-expenses are estimated at £220,000 per annum, making a total of £767,728, requiring an average return of £5.9 per horse-power of substation load, which return should be easily secured.

A similar scheme for the South Island is under consideration, but the details have not been worked out. The outlines of the scheme are simple. Briefly, it would consist of a system of power-stations, all linked together; starting from Lake Coleridge, this power-house would be linked up on the north to a power-station in the Marlborough district and to Westland, and in the south to a power-house intermediate between the present Waipori power-house and Lake Coleridge; this would in turn be linked up to the Dunedin Corporation's plant at Waipori, and Waipori to a power-house in Southland. The inclusive cost would be less, if anything, than the North Island scheme.

The report is divided into headings in the following order :—

- The Function of Hydro-electric Power in the State.
- Electricity in Agriculture.
- Electricity and Industry in General.
- Wood-pulp Industry.
- Electro-chemical and Electro-metallurgical Industries.
- Electrification of Main-line Railways.
- Electrification of Suburban Railways.
- Agricultural Railways.
- Electricity and Coal-mines.
- Electricity in Mining generally.
- General Principles affecting the Generation and Distribution of Power
- Estimate of the Amount of Power to be provided.
- Outline of Scheme of Generation and Distribution.
- Acquisition of Waihi Gold-mining Company's Plant.
- Mangahao Development.
- Waikaremoana Development.
- Waikato Development.
- Primary Transmission System
- Primary Substations.
- Secondary Transmission or Distribution Systems.
- Assistance to Local Bodies
- Capital Expenditure.
- Financial Results.
- General Remarks upon the Estimates.
- Map.

THE FUNCTION OF HYDRO-ELECTRIC POWER IN THE STATE.

The development, distribution, and marketing of electric power on a comprehensive scale has since the war come to be generally recognized as one of the most essential agencies in national reconstruction. Previous to the outbreak of war its importance in national life was but dimly sensed except by a comparatively few persons possessed of an unusual amount of imagination and foresight, and it is evident from reading *Hansard* of a few years ago that even the far-seeing one regarded electric power more as a means of industrial development in the narrower sense in which the term is commonly used than as the nerve-system of the community and as touching every phase of national life.

Neither was it recognized at that time that national organization for production and the promotion of national efficiency was a function of a Government. The war has made it imperative that the nations shall be reorganized on a national scale, and that in future the marshalling of the forces of production must be a definite and conscious function of the Government of a country.

The change in the attitude of public men towards electric-power development is well illustrated by the recent action of the Government in Great Britain. Before the war the generation and distribution of power was left to private enterprise; it is now proposed to set up a body of Commissioners to co-ordinate the activities of the various power-supply authorities and to bring them into line for the advancement of the national interests, and by so doing it is recognized that the organization of power production and distribution will result in a national saving of not less than £100,000,000 per annum; or, putting it in another way which is very striking, the coal saved would be sufficient to generate continuously not less than fifteen million horse-power.

The largest hydro-electric system owned by the State is probably that of the Swedish Government, which has three large hydro-electric stations aggregating over 200,000 h.p., supplying power to a large system for electric smelting, railway electrification, and general industrial supply.

Another of the most notable instances of the development of hydro-electric power by the State is to be found in the Province of Ontario, where the system is managed by a body consisting of three Commissioners. They commenced operations in 1908, and the load has now attained a magnitude of 160,000 h.p. The total length of primary transmission circuits is about 1,500 miles, and of