

In the South Island the load in the Southland area has for some time past exceeded the capacity of the Monowai Hydro-electric Station, the output of which has been supplemented by supply from the Invercargill Steam-station.

In the Westland area the South Island Diesel station, which has been transferred from Lyttelton to Dobson, is now operating in parallel with the Arnold River Hydro-electric Station to supply the Grey Power Board, pending the completion of the transmission-lines from Lake Coleridge.

To provide for the increasing load of the main South Island System, and the additional load which will result from the inter-connection with the Southland and Westland Systems in the near future, two additional generating-units are to be installed in Waitaki Power-station, which will add 30,000 kW. to the installed generating-capacity.

To meet the growing load on the main substations the installed transformer-capacity is being increased by 30,000 kVA. at Penrose Substation, 20,000 kVA. at Khandallah Substation, and 40,000 kVA. at Addington Substation.

At a number of the smaller substations the installed transformer-capacity is being increased either by the addition of a second bank of transformers, or by the replacement of existing banks by others of larger capacity where two banks are already installed.

At substations where the voltage is liable to fluctuate appreciably and synchronous condensers or other means of voltage correction are not provided, the new transformer banks are being fitted with automatic on-load tap-changing equipment to maintain constant output voltage. In the Waikato district automatic on-load regulating-transformers are being provided for existing transformer banks to achieve the same result.

Lake Coleridge-Waitaki System.

Waitaki Power-station.—In connection with the extensions to Waitaki Power-station, drawings and specifications were prepared for tendering purposes for main turbines and generators, voltage-regulating equipment, indoor switchgear and control equipment, 11 kV. to 110 kV. transformer banks, and 110 kV. outdoor switchgear and steelwork. Quick-response excitation is being provided to ensure stability in the electrical operation of the system.

Half-way Bush Substation.—Layout and foundation drawings were prepared for the 110 kV. steelwork and switchgear extensions, including controlling oil-circuit breakers for the transmission-lines to Gore and Oamaru.

Drawings and specifications were prepared for control and relay panels for the 110 kV. equipment, together with detail wiring diagrams for these panels.

Timaru Substation.—In view of the projected change-over of this substation from 66 kV. to 110 kV. operation, the existing 66 kV. oil-circuit breakers and step-down transformers are being replaced by 110 kV. equipment. The present equipment will be utilized for extensions in other parts of the system which will operate permanently at 66 kV. In the meantime, part of the equipment will operate at 66 kV., and part at 110 kV., as the interconnecting auto-transformers are remaining at this substation for the present. Foundation drawings have been prepared for the 110 kV. oil-circuit breakers, and preliminary drawings for tendering purposes for the transformer banks which will be fitted with automatic on-load tap-changing equipment.

Palmerston South Substation.—The design work for this substation is being carried out by the Christchurch office. The initial equipment includes a 2,250 kVA. bank of 110 kV to 11 kV. transformers, with automatic on-load tap-changing equipment, a 110 kV. air-break switch for connecting the bank to the transmission-line, and liquid fuses for overload protection.

Addington Substation.—Drawings were prepared for tendering purposes for the two new 20,000 kVA. banks of 66/11 kV. transformers.

Westland Area.

In order to supply power for the Otira Tunnel electrification which is at present supplied from a steam-station nearby, a substation is to be erected at Otira. The equipment at this substation will include 66 kV. switchgear for two through-transmission lines, and one 3,000 kVA. bank of transformers, with provision for a second future bank. A preliminary layout was prepared for the substation and outdoor switchgear.

Arahura Substation.—The design work carried out for this substation included foundation drawings for 5,000 kVA. synchronous condenser, and control equipment, foundation details for 11 kV. indoor switchgear, and cable ducts.

The design work for the 66 kV. switchgear for the Westland substations and all the design work for the remaining substations is being done by Christchurch office.

Southland System.

Gore Substation.—Detail drawings and specifications were prepared for the building contract for workshop building and oil-filter house. Layout and foundation drawings were prepared for the 110 kV. and 66 kV. switchgear, and 110/66 kV. interconnecting auto-transformers.

Drawings and specifications were prepared for the control and relay panels for the above equipment, together with detail wiring diagrams for these panels and associated equipment. The existing 66/11 kV. transformers at this substation will shortly be replaced by a new 5,000 kVA. bank, with automatic on-load tap-changing equipment. Detail drawings and specifications were prepared for a traverser truck for handling the transformers.

Ohai Substation.—A preliminary layout was prepared for the 66 kV. switchgear, and 750 kVA. bank of 66/11 kV. step-down transformers. Initially, this substation will be equipped with air-break switches for supplying the transformers from either transmission-line and liquid fuses for overload protection.