

*Mangahao-Waikaremoana System.*

With the interconnection of the main North Island power-stations, and recent increase in generating-capacity, the 11 kV. oil-circuit breakers at Mangahao Power-station are now inadequate to meet the exacting service under short-circuit conditions, and are being replaced by new equipment of larger rupturing-capacity. For the same reason, the 11 kV. oil-circuit breakers at Khandallah Substation are being replaced with others of larger rupturing-capacity, the displaced switchgear in this case being transferred to Hamilton No. 1 Substation to replace inadequate equipment at that substation.

The decision to proceed with the erection of the 110 kV. transmission-line from Masterton to Melling involves new controlling switchgear and equipment at both substations. The erection of this section will provide an alternative supply-line to Khandallah via Masterton.

The 110 kV. transmission-line from Napier to Woodville, which carries the bulk of the output from Waikaremoana Power-station, has been subject to severe overloading for some years, and the decision to proceed with its duplication will reduce the transmission losses on this section materially. For this line controlling switchgear is being provided at Woodville and Napier substations, and steelwork for terminating the sections thereof at intermediate substations with an air-break sectionalizing switch at Waipawa.

*Khandallah Substation.*—A layout drawing was prepared for the steelwork, switchgear, transformers, and other outdoor equipment, showing the proposed location of equipment on order.

Drawings and specifications were prepared for the control panels for the outdoor equipment. New equipment being installed at this substation includes 20,000 kVA. bank of 110/11 kV. transformers, 110 kV. switchgear and steelwork for this bank, and for the Khandallah-Melling-Masterton transmission-line, potential transformers for line-relay protection, with combined disconnecting switches and fuses for their isolation and protection, and additional lightning-arresters.

Drawings and specifications were prepared for the 110 kV. switchgear and steelwork. Detail drawings and specifications were prepared for a two-stall reinforced-concrete garage.

*Melling Substation.*—Drawings and specifications were prepared for 110 kV. switchgear for the Melling-Masterton transmission-line, and an additional bay of steelwork, which also provides for a second transformer bank at a later date.

*Masterton Substation.*—Drawings and specifications were prepared for tendering purposes for 110 kV. switchgear for Masterton-Melling line, together with a fourth bay of steelwork for mounting. The contract includes also switchgear for duplicate three-phase 110/11 kV. transformers, switchgear for potential transformers for line-relay protection, and for the existing Masterton-Mangamaire line. Some of this switchgear will replace existing equipment, which is nearing the end of its useful life.

*Woodville Substation.*—Detail drawings and specifications were prepared for tendering purposes for a reinforced-concrete control-room and workshop building.

Drawings and specifications were prepared for 110 kV. switchgear for the second Napier-Woodville line, and two additional bays of steelwork complete with bus-bars and bus-bar sectionalizing switches. The drawings and specifications for this contract include also the steelwork and switchgear for this line at the other substation *en route*, together with other new or replacement equipment required for the switchgear installations thereat.

*Dannevirke Substation.*—Two new bays of steelwork are included, together with four new air-break switches for existing equipment, bus-bars, and connections for second three-phase 110 kV transformer, and through connections for the second line.

*Waipawa Substation.*—One new bay of steelwork is being added with connections and sectionalizing air-break switch for second line, and four replacement air-break switches for existing equipment.

*Napier Substation.*—Switchgear for the new line is being added.

*Bunnythorpe Substation.*—Drawing was prepared for tendering purposes for 10,000 kVA., 110/11 kV. transformer bank.

*Mangahao Power-station and Village.*—Drawings and specifications were prepared for tendering purposes for twelve cottages in two contracts together with extensions to water-supply and sewerage systems, and garages for rental for private cars of operating staff, comprising one five-stall communal garage, one two-stall, and two single-car garages. Some of these cottages will replace existing temporary accommodation, and others are required for the extra staff required due to the introduction of the forty-hour week.

*Waikaremoana Power-station and Village.*—Drawings and specifications were prepared for tendering purposes for 110 kV. switchgear for the third generating-unit, and for a proposed installation of reactors to limit the maximum rupturing duty of the 11 kV. switchgear on short-circuit to its safe rupturing-capacity.

Detail drawings and specifications were prepared for eight five-roomed cottages, together with extensions to roading, water-supply, and drainage; and for a new building for single men's and visitors' accommodation.

Drawings and specifications were prepared for garages for rental for private cars.

Specifications were prepared for air-conditioning equipment for the control-room.

*Waikaremoana Lower Development.*—A preliminary layout of building and equipment on site was prepared.

*Arapuni-Horahora System.*

*Arapuni Power-station.*—The design work for the extensions to the power-station and outdoor station was completed except for a few minor details. A new Superintendent's office in reinforced concrete has been added to the original power-station annexe to free the present office for much-needed stores accommodation. A new blacksmiths' shop in reinforced concrete, and a reinforced-concrete kiosk for housing the distribution switchgear for the outdoor station extensions, have also been built. The installation of control and power cables which involved about four hundred cable runs for