

HYDRO-ELECTRIC DEVELOPMENT: CONSTRUCTION WORKS.

Arapuni Power Scheme.—Concrete foundations for units No. 5 and No. 6 were completed. Penstock lining for No. 6 is completed, and No. 5 is nearly complete.

Karapiro Power Scheme.—The diversion tunnel was completed with the exception of some work at either portal, concreting the invert, and removal of construction lifts. The gate shaft was excavated, and part has been concreted. Some 116,000 cubic yards have been excavated on the right bank for the dam, but work has now been suspended temporarily.

Taupo Headworks.—The gate structure and main cut were completed, together with most of the cut at Totara Rapids.

Waikaremoana Lower Development.—Whakamarino Dam and automatic spillway were completed, four gates installed, and the lake-bed cleared of scrub. The tunnel intake was completed, concrete gates were placed in position, and tunnel and siphons completed except for a small closing gap. Concreting of surge chamber was complete to R.L. 911 and headgate shaft excavated. Penstocks are concreted up in tunnels, supporting pedestals completed, and the steel pipe-line welded up except for 5 ft. gaps.

The powerhouse structure was completed except for a few small details. The deepening and widening of the old river-bed for the tailrace has been completed as far as possible at present.

Cobb River Power Scheme.—Investigation of the dam-site has been carried out and bores and shafts sunk. The tunnel was pierced during the year, and some excavation to full section and concreting of footings, walls, and arch carried out.

Excavation for the pipe-line was practically completed. Further work on access roads up to the dam has been carried out and miscellaneous buildings erected.

Lake Tekapo Power Scheme.—Buildings for workmen's accommodation and for the manufacturing of concrete blocks have been erected, and all construction plant installed. One of the two tunnel shields is nearing completion at Temuka. At the inlet a heading was driven for 40 ft. down-stream from the shaft to take the shield. This shaft has been concreted up, and other measures taken to safeguard the work until construction is resumed. Operations have now been temporarily suspended on this work.

Highbank Power Scheme.—This scheme will be supplied with water from the Rangitata Diversion Race, and work is continuing to bring the scheme into operation as soon as possible. The 11 ft. concrete pipes for the low-pressure portion of the penstock are cast, and most of the steel for the high-pressure portion is in hand.

The powerhouse and staff cottages are under construction. A reinforced-concrete substation building, water-tower, and staff cottages are being erected at Hororata, where power from Highbank will link up with the South Island system.

CONSTRUCTION AND IMPROVEMENT OF ROADS.

A further reduction was made in the scope of operations relating to the construction and improvement of roads and bridges. Where practicable, formation work was suspended, and many roading proposals which in normal times would merit immediate attention have had to be deferred until conditions generally become favourable.

The following is a summary of the completed work for the past year: Formation, 105 miles; metalling, 160 miles; bridging, 6,017 lineal feet; culverting, 12,340 lineal feet.

LANDS-IMPROVEMENT.

Water-supply.—Concrete reservoirs have been constructed for the small farm settlements at Te Maire and Rehutai.

Swamp Drainage.—Work has continued on the raising of the Ruawai and Naumai stop-banks.

Kaipara Harbour Reclamation at Glorit, Kukutanga Block, and Oyster Point.—Maintenance has been continued, together with other work on water-supply, fencing, clearing, drainage, and roading.

Sand-dune Reclamation.—The Woodhill area is in good condition. Maintenance and replanting have been carried out where necessary, together with some work on fire-breaks, fencing, and nursery work. Three hundred and seventy-six thousand new trees have been planted out.

The areas at South Kaipara Heads and Pakiri-Mangawai have been maintained, with a certain amount of replanting.

On the North Waikato Heads area progress has been maintained on all stages of the work, and a new tree nursery established. Two hundred and seventy thousand trees have been planted out.

Waitoa Stream.—One hundred and twenty chains of diversion cuts were completed and $4\frac{1}{2}$ miles of stream-snagging carried out.

Kurere-Komata Drain.—Work consisted of 52 chains of drain-deepening and the installation of two flood-gates.

Matatoki Drainage Scheme is almost completed.

Mangaorongo Stream.—Clearing of willows and logging were carried out for 4 miles 47 chains.

Judea Swamp Drainage.—This work is now completed.

Mangapu Drainage Board.—Work has continued on the Mangapu, Orahiri, and Mangarama Streams.

Manawatu River (Whirikino Cut).—This cut is about half complete, the excavation being on an average down to high-water mark.

Hokio Sand-dune Reclamation.—Maintenance and replanting were carried out during the year.

Ashley River Control.—Major floods during the year caused extensive damage, and partial repairs have been carried out to give a reasonable degree of safety.

Karamaea Flood Control.—The stop-bank on Blackburn's property was completed and other works carried out.

LIGHTHOUSES AND HARBOUR-WORKS.

LIGHTHOUSES.

Routine maintenance and overhaul of equipment have been carried out to the various lighthouses.

Cape Reinga.—The light-tower installation, buildings, and 75 ft. towers have been completed.

Moko Hinu.—An underground concrete reservoir has been constructed.

Portland Island.—An access road has been formed between the landing and the lighthouse, and the channel leading through the reefs widened.