

plan survey was made of an area over which 12 chains of stop-bank have been constructed for the acquisition of the necessary land. An area of approximately 4 square miles on the left bank of the Waihou River, from Ngahina to Waimarie, was levelled, and a contour plan prepared for drainage purposes. The Komata Creek has been surveyed for a distance of $2\frac{1}{4}$ miles, also an area of land between this creek and Wight's Hill, to enable a topographical plan to be prepared to fix the position of the outfall for the main drain. Space will not permit the inclusion of a full account of the survey-work carried out, but the above will give some idea of its nature and extent.

General.—A special appliance has been built for the purpose of removing shoals in the river. A new cut has been made to straighten the Waitoki Creek, and a considerable improvement in drainage has resulted; some further work is still required in the upper part of the creek. A party has been engaged in clearing and ring-barking willows along both banks of the Ohinemuri River for a distance of about 70 chains.

TRAMWAYS.

As usual, the Department's Engineers have inspected portions of the various municipal tramways and their rolling-stock in accordance with the provisions of the Tramways and Public Works Acts. All these undertakings are seriously affected by war conditions, materials being almost unobtainable, consequently extensions of the lines and plant have been reduced to a minimum. Some of the matters dealt with by this Department are mentioned below.

Takapuna Steam Tramway.—A proposal to haul road-metal over this line was investigated and reported upon.

Gisborne.—One new car was passed as fit for traffic.

Napier.—Considerable trouble has been experienced with broken car-axes, and the Department is co-operating with the Borough Council in an endeavour to ascertain the cause, various tests of the material having been made and reported upon.

Wellington.—A duplication of the line in Cuba Street, and an extension of a loop on the Island Bay route near Duppa Street, have been inspected and passed.

Christchurch.—A loop was constructed on the Cashmere Hills route, at Barrington Street; and the Opawa line has been relaid with railway-pattern rails as a temporary expedient, regular tramway rails being unobtainable. Three new trailer-cars were inspected and certificates given.

Dunedin.—In connection with the Eglinton Road extension of the Mornington Cable Tramway, a proposal to use petrol-driven cars as a temporary expedient was approved, subject to certain experiments showing satisfactory results.

MARINE.

Numerous inspections and reports have been made on behalf of the Marine Department, particularly in the northern districts, in connection with harbour-works, reclamations, wharves and landings, foreshore leases, &c., and various works have been carried out, notably the following:—

Paihia Wharf (Bay of Islands).—A new wharf, with approach roads, was constructed at this place, but unfortunately it suffered serious damage through exceptionally high tides and heavy gales in February last, so that extensive repairs are necessary.

Tiritiri Lighthouse.—Two new cottages and outbuildings are in course of erection and nearing completion.

Ventilating-cowls.—Copper cowls for ventilating purposes have been manufactured under contract for Akaroa, Portland Island, Moeraki, and Cape Foulwind Lighthouses.

Waitakaruru Stream.—Snags have been removed from the channel, and arrangements have been made for the construction of a breastwork and leading-light.

Flat Rock Beacon.—A concrete pedestal is being constructed for a beacon light on Flat Rock, off Kawau Island. This work is extremely difficult, as the rock is practically awash at high water whenever the sea is at all rough, so that it is only occasionally, and for short periods at a time, that it is possible to work on the rock, while exceptionally heavy seas have seriously damaged the unfinished work on more than one occasion. However, the pedestal is now above the reach of the waves, and better progress can be made. It is expected that this part of the work will be completed very shortly. The iron surmount to accommodate the gas-cylinders and carry the lantern is being manufactured in Dunedin.

Tauranga.—A dolphin to carry an acetylene beacon light was constructed on behalf of the Tauranga Harbour Board.

Whakatane.—A plan and description of the limits of the Whakatane Harbour were prepared.

Castle Point Lighthouse.—The roofs of the keepers' cottages were repaired.

Marine Yard, Pipitea, Wellington.—A 5-ton crane which was purchased by the Marine Department for handling heavy stores has been fitted up.

Dog Island Lighthouse.—The existing masonry tower is being strengthened by the addition of a sheathing of reinforced concrete.

Puysegur Point Lighthouse.—Three new cottages have been erected.

DEFENCE WORKS.

Sundry new works have been carried out for the Defence Department, and existing works and buildings have been maintained and improved.

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Engineer-in-Chief.