

REFERENCE No. 1.

To inquire into the cause or causes of the silting-up of the channels, the flooding of the adjacent lands by the said rivers, the erosion of their banks, and the damage to the surrounding country.

Your Commissioners attribute the silting-up of the river-channels to the natural tendency of the river to build up its bed on the flattened gradient in the vicinity of Coutt's Island. This is simply a phase in the life-history of the river, which must inevitably continue; but we are of the opinion that the amount of shoaling which under ordinary conditions would have occurred has been vastly increased by the amount of detritus emptied into the river through bank-erosion during the past thirty or forty years. A greater number than the average of small floods may have assisted to bring about the result. On this latter point we have no direct evidence, but it is quite possible that the destruction of large areas of bush and other growth in the upper drainage areas may have been the cause of a greater number of freshes and small floods, which, while insufficient to transport heavy shingle or gravel, might bring down a large quantity of finer material. We are also of opinion that failure to keep the river-beds clear of gorse and other vegetation has assisted in rendering any shoaling or sandbanks more stable and permanent.

The flooding of the lands adjacent to the river is in some cases due to want of proper stop-banks, or to stop-banks being of insufficient height. Towards the lower end of Coutt's Island, however, the flooding is, in our opinion, caused mainly by the ponding-up of the flood-waters due to inadequate channel-outlet on the flattened gradient below.

Flooding of Kaiapoi and the surrounding country is also caused in some cases by local floods in the Eyre and Cust, also by flood overflow from the Ashley River. The former is mainly due to insufficient height of stop-banks, coupled with inadequate outlet at the lower end near Kaiapoi, while the latter is due almost wholly to want of proper stop-banking on the south side of the Ashley River.

REFERENCE No. 2.

To ascertain the nature and extent of the damage done to the lands adjacent to the said rivers, and what area of land is affected by such floods or erosion, or both, and whether it is practicable at reasonable expense to prevent such flooding or erosion, or both, either wholly or partially.

The damage done by floods consists in—(i) Actual erosion of land on the river-banks; (ii) damage to crop and other improvements on the land; (iii) damage to house property and furniture, tradesmen's stock and fittings; (iv) damages to the railway-line, roads, and bridges; (v) damage due to loss of railway and road traffic, and also to general dislocation of business and farming operations, &c.; (vi) there is, in addition to actual damage, the ever-present risk of damage to Christchurch, and also to other portions of the district not hitherto flooded, due to the possibility, under existing conditions, of the river breaking through inadequate protective works and scouring out new overflow-channels, or of again reverting to old channels.

The area of land eroded amounts to some 2,740 acres on the north river-bank, and about 1,000 acres on the south bank, the estimated total value of which is £112,000.

With respect to the other kinds of damage done by floods we have insufficient data on which to form any estimate of the money value, and can only express the opinion that during the past fifty years the total amount would be very considerable.

Your Commissioners consider that it is practicable at reasonable expense to prevent to a considerable extent the erosion of the river-banks now taking place, and also to prevent—if not wholly, at least partially—the flooding of the lands in question.