

None of the local authorities kept any figures (or, at any rate, they were unable to produce any) showing the amount of damage done by floods. Floods in this river are of very short duration and quickly subside.

It was stated in evidence that the river-bed at the Rolleston Bridge has risen 3 ft. 6 in., at Clandeboyne considerably, and at the Orari traffic-bridge 3 ft. No absolute measurements, however, could be produced to substantiate these statements, although work which has had to be done to the road bridge at Orari appears to bear out the statement. The reverse, however, has occurred at the Geraldine Bridge, where, owing to the shortening of the bridge and the confining of the waters by stop-banks, the bed of the river has scoured deeper, no doubt depositing the scoured material further down.

REFERENCE No. 1.

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

As previously stated, the silting-up of the channel and the flooding of the adjacent lands is due primarily to the river naturally having low and ill-defined banks; secondly, to the growth of willows, gorse, and other exotic vegetation in the channel, thereby arresting the natural travel of the shingle, which shingle has no doubt increased in latter years as the result of accelerated denudation due to causes referred to above. The increased quantity of shingle, together with the willows, blocking up the natural channel, have forced the river to erode the banks in its efforts to maintain a channel sufficient for its flood-flow.

REFERENCE No. 2.

To ascertain the nature and extent of the damage done to the lands adjacent to the said river, 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.

As previously stated, the absence of any proper records in the hands of the local authorities or individual settlers makes it impossible to estimate the extent of the damage done. Its nature is at least threefold: first, loss of land by erosion (area cannot be ascertained); secondly, crops and pasture are damaged by submersion by flood-waters, and a few stock lost by drowning; thirdly, metal is washed off the roads, and some damage is done to the railway.

The area flooded or likely to be flooded is approximately 30,000 acres.

Your Commissioners are of the opinion that it is possible to prevent both the flooding and the erosion at reasonable cost.

REFERENCE No. 3.

To ascertain the best method of providing for the control of the said river and its tributaries so as to safeguard the lands affected, and to provide for the effective control and improvement of the said river and its banks.

Your Commissioners recommend the following remedial measures:—

(a.) Clear out a uniform channel through the gorse, willows, and other obstructions from the Upper Orari Bridge, near Geraldine, to the estuary. It will not be necessary to clear the whole width of the river-bed; in fact, the growth now existing at the sides can with advantage be left to assist in building up that portion of the bed, and gradually raising it above flood-mark and rendering it suitable for farming purposes.

(b.) When a channel through the gorse and willows has been cleared (and it must be understood that clearing involves more than the mere cutting of the trees—they must be poisoned and actually removed), any gaps existing between the willow plantations on each side must be filled up with fresh willows (which must be kept under control), and by gabion nets at special danger-spots. The rows of willows facing the stream must be wired together so as to prevent any one from drifting away if undermined, and so as to assist in catching debris flowing or being otherwise carried down the river.