

1918.  
—  
VICTORIA.

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REPORT

FROM

THE PARLIAMENTARY STANDING COMMITTEE  
ON RAILWAYS

ON THE

WARANGA AND RUSHWORTH RAILWAY  
DEVIATION;

TOGETHER WITH

MINUTES OF EVIDENCE AND PLAN.

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*Ordered by the Legislative Assembly to be printed. 13th December, 1918.*

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RAILWAYS STANDING COMMITTEE REPORT No. 4.—[6D.]—15602.

EXTRACTED FROM THE VOTES AND PROCEEDINGS OF THE  
LEGISLATIVE ASSEMBLY.

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TUESDAY, 29TH OCTOBER, 1918.

4. WARANGA AND RUSHWORTH RAILWAY DEVIATION.—Motion made, in accordance with the requirements of the Railways Standing Committee Act, and question—That the question of deviating the railway between Waranga and Rushworth stations, so as to raise the rails above the high-water level of the enlarged Waranga Water Storage Basin, be referred to the Parliamentary Standing Committee on Railways for inquiry and report (*Mr. Barnes*)—put and, after debate, agreed to.

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MEMBERS OF THE PARLIAMENTARY STANDING COMMITTEE ON RAILWAYS.

(*Twelfth Committee.*)

J. MENZIES, Esq., M.L.A., Chairman ;

\*The Hon. S. Barnes, M.L.A.,  
The Hon. J. W. Billson, M.L.A.,  
The Hon. A. Hicks, M.L.C.,

The Hon. D. Melville, M.L.C.  
(Vice-Chairman),  
R. H. Solly, Esq., M.L.A.,  
†R. F. Toutcher, Esq., M.L.A.

\* Ceased to be a member on becoming a responsible Minister of the Crown, 21st March, 1918.  
† Appointed 27th March, 1918.

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# REPORT.

THE PARLIAMENTARY STANDING COMMITTEE ON RAILWAYS, to which the Legislative Assembly referred the question of deviating the railway between Waranga and Rushworth stations, so as to raise the rails above the high-water level of the enlarged Waranga Water Storage Basin, has the honour to report as follows:—

## DESCRIPTION OF PROPOSED WORK.

1. When the severe drought occurred in Victoria in 1914-15 the irrigation settlements in the Goulburn Valley and on the northern plains, which were dependent on the Goulburn-Waranga irrigation scheme for their supplies of water, suffered through the volume of water stored in the Waranga Reservoir being insufficient to meet the requirements. In consequence of the shortage of water, orchards, vineyards, and crops in those districts were insufficiently irrigated, and gave poor returns to the occupiers of such lands. A drought of such severity was unprecedented in Victoria, the northern rivers of the State practically ceasing to flow for several weeks in the summer of 1914-15. Having experienced such conditions, it was decided to guard against their repetition, so that the northern irrigation settlements, in which much capital had been invested by the State in the construction of waterworks and channels, and by individuals in lands and improvements thereon, should not again be placed in jeopardy.

2. It was therefore proposed by the State Rivers and Water Supply Commission to enlarge Waranga Reservoir, which is supplied with water from the Goulburn River by means of a weir erected across that stream 9 miles above Murchison. This weir raises the level of the river and diverts the water into the western main channel, down which it flows for  $23\frac{1}{2}$  miles to Waranga Reservoir. The main channel is 110 feet wide in the bed and 131 feet at full water surface. It has a total fall of 12 feet in the  $23\frac{1}{2}$  miles, or 6 inches to the mile, and when flowing full carries a depth of 7 feet of water, and has a flow of 103,000 cubic feet, or 643,750 gallons per minute. The object of having such a broad, deep, main inlet channel is to enable full advantage to be taken of a freshet or flood coming down the Goulburn River, by diverting a large volume of water in a short period into Waranga Reservoir and retaining it there for several weeks or months until it is required for irrigation purposes in the Goulburn Valley and the Campaspe and Loddon rivers districts to the north and north-west of Waranga.

3. The Murchison East-Rushworth railway was constructed nearly 30 years ago past the foot of several low rises on the west side of Waranga station. These terminated in a slight but wide depression to the north of the railway line, the natural grade of the country being towards the north. Several years later this depression or swamp was formed into the Waranga Reservoir by an earthen embankment, some 4 miles in length and averaging about 27 feet in height, being constructed across the lower or northern end of the broad flat depression. The crest of the embankment was 8 feet higher than the top water-level of the reservoir. When this storage basin was full  $19\frac{1}{2}$  square miles, or nearly 12,400 acres, were submerged, and the volume of water therein was 197,000 acre feet.

4. As already stated, it was decided in consequence of the shortage of water for irrigation in the drought year of 1914-15 to enlarge the holding capacity of Waranga Reservoir by raising the embankment at the north end of the storage basin 12 feet, thus allowing the surface of the water to be raised 10 feet, and increasing the quantity contained therein from 197,000 to 335,000 acre feet. In the *Water Supply Loans Application Act* 1915 £60,000 was voted towards the cost of raising the embankment, and that work is now well in hand. Subsequently additional sums were voted by Parliament, and it is expected that a total expenditure of £270,000 will be necessary to complete the works, including the raising and widening of the embankment; protecting its inner surface by heavy stone pitching against erosion by wave action; purchase of adjacent lands which will be submerged, the surface of the enlarged reservoir being 15,200 acres as compared with 12,400 formerly; and in deviating the Murchison-Waranga-Rushworth railway and the adjacent main road to prevent them being submerged by the increase in the height of the stored water.

5. The existing railway line skirts the southern end of Waranga Reservoir, two small lengths of it—totalling about 55 chains—being carried partly on low embankments and partly on short bridges through that end of the storage basin, where there is a depth of 3 ft. 6 in. of water against the railway embankment at present full supply.

6. Three proposals were considered for keeping the railway above the new water-level, due to the enlargement of the reservoir. The first was to retain the line in its existing position, and raise the embankments and bridges 11 feet above their present heights. This would obviate the purchase of any land for railway purposes, as will be necessary if a deviation is

made from the existing route. It would also avoid the lengthening of the line between Waranga and Rushworth and the probability of the users of the railway at the latter town and stations beyond on the Colbinabbin and Stanhope branches having to pay a slight increase in railway charges for the carriage of goods and live stock over the line. This proposal, however, had two disadvantages. The raising of the embankments, owing to the large quantity of earthworks involved, and bridges, &c., would cost £52,627, or more than double the outlay on either of the propositions referred to later on in this Report. Moreover, there would be a continuous length of  $1\frac{1}{4}$  miles of embankment exposed to the wave action of the stored water in the reservoir, which is over 5 miles in length from north to south. As strong winds occasionally come from the north, the wave action on such a long railway embankment on the southern side of this extensive storage basin might cause the expense of maintenance to be high, though this has not so far been the experience with the long embankment forming the northern side of the reservoir. For these reasons neither the Railway Department nor the State Rivers and Water Supply Commission approved of this proposal, and with that view the Committee agreed, after inspecting the existing railway line, the reservoir, and its surroundings.

7. The second proposal, which was the one submitted by the Railway Department and concurred in by the State Rivers and Water Supply Commission, was to alter the course of the railway so as to locate it about half-a-mile south of its present route and carry the new line partly on low embankments and partly on short bridges for a total length of 60 chains through the southern end of the enlarged reservoir. The water at full-supply level would be about 4 feet deep against these embankments, and the top of the rails of the deviated line 5 feet above that water-level, so that the waves would not reach the bed of the railway track. The advantages of this route were that it would not unduly lengthen the railway between Waranga and Rushworth and so add materially to the railway charges to the latter station and places beyond, the increase in the length of haulage being but 28 chains, and it would not cause much additional maintenance expense. Moreover, the estimated cost of this proposal, exclusive of land purchase, was only £22,948, as compared with £52,627 for the first proposition, and the ruling grade would be the same as on the existing railway. But from that £22,948 has to be deducted £778, being the Railway Department's estimated net value of permanent-way materials (rails and fastenings, serviceable sleepers, &c.) recovered when the existing line is dismantled, making the actual estimated cost of the work £22,170. The present line has to be kept open for daily traffic, and it will consequently be necessary to lay down a fresh track for the full length of the deviation before the existing track can be taken up, otherwise the traffic would be unduly interfered with, as the rails and serviceable sleepers on that track could not be pulled up and re-laid on the new way in less than eight or nine working days. The Committee was informed that such a method of construction would be undesirable from an economic standpoint.

8. The principal items of proposed expenditure were—Earthworks in cuttings and embankments, £10,019; removing stone beaching from existing railway embankment and replacing it on new embankment to stop erosion by wave action, £544; additional stone beaching £1,726; bridges (total lengths, 225 feet), £1,189; sleepers, £1,529; rails and fastenings, including railway freight on same, £3,379; ballast, £542; fencing, £381; engineering, supervision, and general expenses, £1,473; provision for unforeseen contingencies, £2,086. The cost of the additional land which will have to be purchased for the new railway track and road deviations is to be provided for in the sum to be voted in the Water Supply Loans Application Bill for the completion of the enlarged Waranga Reservoir.

9. Although forming no part of the railway deviation, the Committee ascertained during its inspection of the works for the enlargement of the Waranga Reservoir that the banks of the last 4 miles of the lower or outlet end of the western main channel carrying the water from the Goulburn River to this storage basin are to be raised gradually up to a maximum of 2 feet or so at the outlet. The height of the weir on the Goulburn River above Murchison is 408 feet above sea-level at low tide. The fall in the western main channel is 6 inches to the mile, and as that channel is close on 24 miles in length, the total fall in that distance is nearly 12 feet, making the present full-supply level near the outfall of the main channel into the reservoir 396 feet. The full-supply level of the enlarged reservoir will be 398 feet. Therefore it will be necessary to raise the banks of the main channel by 2 feet or so, as the last 3 or 4 miles of that channel will become part of the enlarged storage basin when the stored water is at its full level. There is to be a gate erected across the outlet of this channel, so that should its banks be breached at any time the escape of the stored water from the reservoir could be prevented.

#### NEW ROUTE SUGGESTED.

10. On the Committee visiting the district and inspecting the surroundings it considered that the question of deviating the railway still further south, so as to keep it well above full-supply level of the enlarged reservoir, should be investigated. While this route would pass through rising

ground, involving longer cuttings, there would, on the whole, be less earthworks in connexion with this deviation than on the one favoured by the Railway Department, because the formation would be lower than the embankments passing through the southern part of the enlarged reservoir. The Committee also ascertained from the State Rivers and Water Supply Commission that it would be possible, by constructing a wide tunnel in a neck of country between the weir on the Goulburn River above Murchison and Waranga Reservoir, to so shorten the length of the western main channel carrying the supply of water from that river to that storage basin as to permit the full-supply level of the reservoir to be still further raised by about another 5 feet. This, however, the Commission stated, "was a remote contingency; but if the demand for water for irrigation largely increased it might be advisable to carry out this work." Nevertheless, it should not be overlooked that it is only 28 years since the present railway was constructed to Rushworth, and it was then thought it was being kept sufficiently above the full-supply level of the reservoir which was about to be made at Waranga Swamp. The present enlargement of that reservoir was doubtless regarded at that time as but a "remote contingency." As irrigation and closer settlement on irrigable lands are practically in their infancy in this State, the Committee considered it was justified in having the proposal to keep the deviated railway outside water-level investigated, especially in view of what has already occurred in increasing the storage capacity of the reservoir.

11. At the outset, through the Committee being informed that the State Rivers and Water Supply Commission is to pay the whole cost of the railway deviation and carry out the major portion of the works, including the earthworks, the Railway Department merely laying down the railway track, the Committee was under the impression that the Commission had selected the route of the deviation and prepared most of the estimates of costs. Subsequently the Committee learnt that this was not so, as the Railway Department's Chief Engineer for Way and Works (Mr. E. H. Ballard) had chosen the course of the deviation. The Committee also learnt that Mr. Ballard had taken out the estimates of cost, which had been accepted by the Commission, though the latter thought it would succeed in doing the earthworks for less than the estimated sum, because it had the plant close at hand, and would obtain most of the material for the embankments adjacent to them from the soft, low-lying lands which are to form the bed of the enlarged reservoir, and not from along the railway line, as the Department's engineers had intended. In the meantime, however, the Committee, being under the impression stated, asked Mr. M. E. Kernot, Chief Engineer for Railway Construction, because of his long experience in railway construction, to check the estimates of cost. This necessitated an inspection of the country; and the Committee asked him when there to also look into the third proposal to keep the deviated railway outside the full-supply level of the enlarged reservoir.

12. With the assistance of levels taken by the State Rivers and Water Supply Commission Mr. Kernot was enabled on his return to inform the Committee that on the data made available to him and his inspection of the ground he had made a rough estimate of the route suggested by the Committee, keeping the new line clear of the reservoir. This route would be half-a-mile longer than the second proposal, but the ruling grade of both routes would be the same, so that the loads hauled would not be affected. This rough estimate showed that the cost of the Committee's proposal would be £17,692 for works, but from that Mr. Kernot deducted £1,412, being his estimated net value of the rails, sleepers, &c., released from the existing line, making the actual estimated cost £16,280. To the latter sum he added £4,150 as the estimated capitalized sum to cover the additional running and maintenance expenses of this longer line in case such a sum should have to be paid to the Railway Department to avoid it increasing the mileage charges—fares and rates—to and from Rushworth and the stations beyond. His total estimated outlay for the third proposal was therefore £20,280, as against £22,170, which was the Department's estimate for the second proposal, and which did not include any sum to cover the capitalization of the extra running and maintenance expenses on that route, owing to its being 28 chains longer than the existing railway. If that sum, which Mr. Ballard estimated at £1,882, were allowed for, the difference in the cost of the two proposals would, the Committee considers from the evidence before it, be sufficient to pay for the additional land which would have to be purchased through keeping the new line clear of the enlarged reservoir. The opinion, however, was expressed by Mr. Ballard that the Traffic Branch of the Railway Department would prefer to follow the usual practice of charging fares and rates on the basis of the actual mileage hauled rather than accept a capitalized sum to cover the extra running and maintenance expenses due to the lengthening of the route by the construction of the deviation.

13. Mr. Ballard informed the Committee that he was unaware till he heard Mr. J. S. Dethridge, State Rivers and Water Supply Commissioner, giving evidence that there was a possibility of the full-supply level of the Waranga Reservoir being still further increased by shortening the length of the western main channel from the Goulburn Weir. In view of that evidence he considered that the matter of keeping the deviated railway outside of the submerged area due to the present enlargement of the reservoir should be looked into before the present line is moved "if there is any reasonable probability of the further increase in the full-supply level of the reservoir to 403 feet being accomplished within the next generation." He added

that it would take about a month to make a survey and prepare a detailed estimate of the cost of the alternative deviation suggested by the Committee, keeping the new railway line outside the area to be shortly submerged by raising the water in Waranga Reservoir to the 398-feet level.

14. The Committee also wrote to the State Rivers and Water Supply Commission, informing it of the rough estimate of cost of this new route made by Mr. Kernot, and inquiring if, in view of this estimate and of the evidence given by Mr. Dethridge as to the possibility of the full-supply level of Waranga Reservoir being still further raised by another 5 feet, the Commission thought it desirable that the alternative deviation should be further looked into. It replied that, "in view of the evidence to the effect that the cost of the more southerly route would be little, if any, more than the one estimated to cost about £22,000 (passing through the south end of the enlarged reservoir), the Commission thinks the suggested further survey and estimate by the Way and Works Branch of the Railway Department should be made." The Commission, however, emphasized the need of having this done with the least possible delay, as the work of enlarging the reservoir is now well in hand, and it did not want the railway deviation postponed, as such a course might prevent the additional water being stored in the enlarged reservoir on its completion.

#### RECOMMENDATION OF THE COMMITTEE.

15. The Committee agrees with the opinion of the State Rivers and Water Supply Commission that there should be no unnecessary delay in this matter, so that an increased supply of water for irrigation may be stored in the enlarged Waranga Reservoir at the earliest date, and that the expenditure on the deviated railway should not exceed £22,000 or thereabouts. The Committee, the Railways Commissioners, and the State Rivers and Water Supply Commission are all agreed that the existing railway between Waranga and Rushworth must be deviated, and they consider it advisable that before the railway is moved the route suggested by the Committee—to keep the new line outside of the submerged area—should be surveyed and a detailed estimate of its cost made so that, should it be found to be no more, or but little more, expensive than the proposed route passing through the south end of the enlarged reservoir, the railway should be located outside the submerged area. So that this necessary work may not be delayed, the Committee recommends:—

- (1) That the existing railway between Waranga and Rushworth stations be deviated.
- (2) That the Way and Works Branch of the Railway Department be requested to make a survey and detailed estimate of the cost of carrying the deviated railway to the south of the enlarged Waranga Reservoir, keeping the line outside of the submerged area along the approximate route marked on the map, at the instance of the Committee, by Mr. Kernot, Chief Engineer for Railway Construction.
- (3) That a Bill be passed by Parliament this Session authorizing a deviation of the Waranga—Rushworth railway, the limit of deviation allowed in such measure to be sufficient to include the route referred to in the preceding recommendation (2), and providing that when the detailed estimate of cost stated in recommendation (2) is submitted to the Parliamentary Standing Committee on Railways and inquired into and considered by it, the deviation then recommended by the Committee, either the one keeping outside the submerged area or passing through the southern end of the enlarged reservoir, should be carried out without any further authority being obtained from Parliament.
- (4) That the Bill also provide for the deviated railway, when completed, being vested in the Railways Commissioners, and the existing railway lands to be thereupon transferred to the State Rivers and Water Supply Commission.

JAMES MENZIES,  
Chairman.

Railways Standing Committee Room,  
State Parliament House,  
Melbourne, 13th December, 1918.

[*Minutes of Evidence are not printed.*]