Regarding the southern approach, which we recommend should form a waterfront road skirting the foreshore of St. Mary's Bay, we attach much weight to the evidence tendered by the Engineer to the Auckland Harbour Board regarding the industrial development likely to take place in the near future in areas fronting the upper reaches of the Waitemata Harbour. At no great cost in the way of dredging and reclamation, valuable sites can be made available to industrial concerns seeking deep-water, road-served frontages. Furthermore, it does not appear difficult to connect these sites with the existing railway system by means of a branch railway from Avondale. The potential value of such industrial development is undoubted. The Harbour Board's Engineer stated that several inquiries had already been received as to the prospects of sites being available in the near future. We therefore consider the prospective value of a low-level waterfront road forming part of a route leading to future industrial sites, combined with its immediate value as a by-pass of existing built-up areas and its function as an approach to the bridge, are very strong points in its favour.

An unavoidable concomitant of the construction of a waterfront road from Fanshawe Street along the foreshore of St. Mary's Bay is the necessity to extinguish riparian rights; but experience in this and other countries shows that the continued existence of such rights hampers civic development, and we consider that in this case the interests of the few owners who may be injuriously affected by extinguishment of their riparian rights should not be allowed to stand in the way of the creation of a most desirable civic asset.

The through distance from Fanshawe Street to Northcote by the route we propose is 24 chains longer than that along the route fixed by the 1929 Commission and adopted in subsequent proposals that were brought to our notice; but against this additional distance may be offset the value of the direct access to Curran Street and other existing streets which will be afforded to traffic destined for the higher levels of the city, the Whenuapai Airport, and the future waterfront road to which reference has been made. This advantage, together with others we have mentioned, leads us to recommend the adoption of the alignment we have proposed.

Clearances of Main Span, Vertical and Horizontal.—Some further aspects of the bridging problem, all of which affect its cost, will now be mentioned.

As stated above, we early reached the conclusion that the only type of bridge suited to the requirements of navigation and road traffic was a high-level, fixed structure. Any form of opening span would cause intolerable delays and difficulties to shipping and road traffic. It is noteworthy that the papa on which the piers of the principal navigation span will be founded lies at such a depth as to justify a long span, and accordingly we see no reason to depart from the length of the main span as recommended by the 1929 Commission—viz., 800 ft. centre to centre of piers. Regarding the vertical clearance, evidence was tendered to show that there was a trend towards reduction of the height of ship's masts, which appeared to warrant a lower vertical clearance than that adopted by the 1929 Commission; but our inquiries established the fact that radar installations in naval vessels require a vertical clearance of approximately 130 ft. Bearing this point in mind, and having regard to the probable universal installation of radar equipment in mercantile vessels, we think the clearance set by the former Commission—viz., 135 ft.—cannot be substantially lowered, however desirable it may be to effect reductions in the gradients and cost of the bridge. We consider, however, that the central 500 ft. of the soffit of the main span should be curved to parallel a vertical curve in the carriage-way. We recommend a vertical clearance at the mid-point of the main span of 137 ft., decreasing to 132 ft. at 250 ft. on each side of the mid-point—in other words, a minimum of 132 ft. over the central 500 ft. of the main span, and a maximum of 137 ft. at its mid-point. Over the remainder of the main span—that is, for distances of 150 ft. at both ends—it will be advantageous for design purposes progressively to decrease the clearance of 132 ft. as shown in the outline plan accompanying this report, with the dual object of lowering the highest point of the bridge structure and of increasing the depth of the cantilever arms.