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PARLIAMENT OF TASMANIA.

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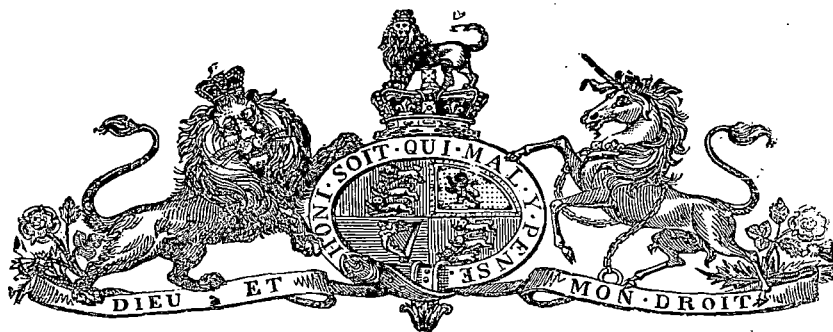
DUCK RIVER, TASMANIA:

REPORT BY C. NAPIER BELL, M. INST. C.E.

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## DUCK RIVER, TASMANIA.

REPORT ON HARBOUR AND WHARF, 25TH JANUARY, 1900.

SIR,

UNDER your instructions I have carefully examined this river and port. I have taken a number of soundings in the network of channels inside the bay and on the bar, and inspected the various sites proposed for a wharf.

Duck River is a small river which is tidal for about five miles above the bridge at Smithton. Below the bridge there appears an immense bay or estuary which at low water shows only dry sandbanks with numerous channels among them. From Smithton at low water the river flows through a narrow shallow creek between the sandbanks with river bottom for over a mile; the channel then continues on among the sandbanks with a width of from 150 to 400 feet and depths of two to three feet for about two and a half miles from Smithton; then the water deepens, and this deep water expands into the wide irregular space, such as I have sketched it on the plan. At Smithton are two little wharves, where ketches lie and load produce, but these wharves are only accessible at high water, and as the range of tide is eight to eleven feet, the small ketches have water enough at high-water to come up to the settlement of Smithton.

The plan accompanying this Report shows the position of the low-water mark and the form of the patch of deep water in Duck Bay. The bay itself is about five and a half miles from east to west, and from one to two miles wide north and south, but, as the plan herewith shows, it is so encumbered with sandbanks and shoals that the deep water available is confined to an irregular area close to the sandy points which form the heads of the entrance to the open sea.

The plan herewith has been drawn by sketching, and is only very approximately correct, but is quite sufficiently so for the purpose of a rough estimate of cost, and for fixing upon the best position for a wharf which will give access to the deep water.

Mr. Lee's wharf at the end of his saw-mill tramway has now lying at it a brig of 300 tons, but the channel leading from it to deep water has only about two feet of water at L.W., and the wharves at Smithton are only accessible by small ketches. The settlers wish to get a wharf in such depth of water as will allow as large a vessel to lie at it as can get over the bar. Now inside the entrance, and, as I am told, entirely sheltered, there is an irregular patch of deep water with up to 20 and 24 feet of water at L.W. S.T. This patch, which on the plan looks very small, is roomy enough for navigating almost any size steamers when once inside the Heads.

You will observe in the plan that the bar is about one and a half miles outside the Heads with 5.6 to 6.0 feet of water on it at L.W. S.T.; also that it is approached from inside by a long channel 700 to 800 feet wide, the depth of which decreases from 24 feet at and just outside the Heads to the depth on the bar of six feet, and this channel is surrounded by shoals in the form of a horseshoe; all the bottom is sand. It is asserted by the masters of vessels using this port, that at H.W. Duck Bay may always be entered on 14-foot draught, and as the average of tide is always about nine feet, and as the weight of the only waves which approach the bar—that is from N. and N.E.—are of no

great height, I believe it to be quite probable that on 14 feet at H.W. steamers would very seldom be prevented by the weather from getting in. The bar is about one and a half miles outside the Heads, and I consider it to be out of the question to think of doing anything to this bar unless by dredging, it could be deepened; to carry out training walls or breakwater with that object would cost a very large sum of money.

On the plan herewith at Pelican Point, marked A, the deep water approaches nearer to the dry land than elsewhere; here after crossing about 47 chains of sand-flats covered at H.W. a depth of 12 or 14 feet is found, leading directly into depths of 20 to 24 feet. A wharf placed here would be three miles five chains from the bridge at Smithton. There would be to the wharf two miles 35 chains of a road to make over sandy ground; then 47 chains of a low trestle over the space between H.W. and L.W.; then three and a half chains of piled approach; and then the position for the wharf would be reached with about 14 feet of water alongside at L.W., and this position is said to be perfectly sheltered with still water in all weather. This position is readily accessible from the sea, and has plenty of room for any steamers that would trade to this port.

The settlers and farmers of the right or east side of Duck River are, however, opposed to having a wharf on the left or west side of the river, alleging the distance from Smithton as their reason.

I was accordingly shown the position they preferred, which is marked B. on the plan. To get at this place it would be necessary to cross the entire estuary to reach a narrow inlet of deep water close to or within 1200 feet of the eastern point of land which encloses the bay from the sea. This place being out of the question, they then showed me a spot, marked C. on plan, which they think would suit all their requirements. This place is in the main channel leading up the river; it is about 43 chains above Lee's wharf, and one mile five chains distant from the bridge at the town, of which 20 chains would have to be a trestle-work so as not to interrupt the natural flow of the tides. For this position C. they do not aim at deeper water than that which is found on the bar—that is, six feet at L.W. S.T. The average depth to be dredged to get this depth would be about three feet six inches, and the length of channel to be dredged to get into six feet of water would be about one mile 20 chains. The natural channel at L.W. is at C. about 150 feet wide, and at the place where lower down six feet of water is got is 500 feet. This project requires the berthage at the wharf to be dredged to a depth of 14 feet at L.W., so that vessels loaded might lie afloat. It also requires a turning-basin to be dredged, which, together, would make the total dredging about 157,000 cubic yards.

This project C. is feasible enough, but it is subject to the uncertainty attending the result of dredging—that is, whether the dredged channel would silt up or not. Nothing but actual trial will solve this question. If there had been a large body of water above and further up the river, I would have little doubt that the current would keep it scoured to the required depth; but the open estuary terminates just above position C., and although the river itself is tidal for about five miles above the bridge, yet, being small and very crooked, I do not consider it can furnish much scouring power to the dredged channel. My opinion, therefore, is that the dredged channel, and especially the deep berthage and turning-basin, would continually silt up to some extent, and require periodical dredging to maintain the depth aimed at; but it would be impossible for any man to determine beforehand what the amount of silting would be, or what expense would be incurred yearly for dredging, if any.

If position C. were adopted, the roadway, the trestle-work across the sands, and the wharf, must be placed on the left or west side of the river, so as to suit all the traffic that has to use the wharf, of which the timber traffic greatly exceeds in bulk that of agricultural products, and the timber traffic could not be taken round to the east side of the river—therefore the agricultural products must be taken to a wharf at C. by way of the west side, as indicated on plan herewith.

The settlers with whom I discussed the subject seemed strongly averse to having a wharf on the west side, for which they alleged the disadvantage to them of greater distance to cart produce. But if we take the bridge at Smithton as the starting point it would be no farther to reach the point C. by way of the west than it would be by way of the east side, and to suit both kinds of traffic, that of timber and that of farm products, it is absolutely necessary to have the wharf on the west side. Those with whom I discussed this subject asserted that the timber traffic might be left to make its own wharf anywhere on the west side where it could get at the dredged channel, but against this view of the case there would be the unnecessary expense of requiring two wharves, two deep loading-berths, and two turning-basins, and as there are about three times as many vessels leaving the port to load timber as there are to load farm products, and as the timber cannot be taken over the bridge to the east side, it follows that the wharf must be on the west side.

The question of the best position for a wharf at Duck River is, therefore, restricted to two places—that at C., or that at Pelican Point at A.; the method being to make a metalled road to H.W.M. at either C. or A., with an open piled trestle-work across the sand-flats to reach the

wharf at either place. At H.W.M. there should be a yard and a shed to shelter goods, and rails should be laid over the trestle-work to the wharf, horses being used to drag the trucks over the trestle to the wharf.

I know that the settlers contemplate and prefer a causeway or stone over which they could cart their own stuff to the wharf; but as the stone causeway would cost about 50 shillings a foot while the pile trestle-work would cost 16 shillings, I assume that, for the present at least, they must put up with a tram on the trestle. I also prefer an open trestle to a solid structure of stone, as the latter might cause unlooked-for change in the sandbanks and channels, by obstructing or diverting the tidal currents.

I am well aware of the strong desire there always is to bring the shipping close up to the town, and in places of importance it is often best to do so; but in this instance I think the best interests of the whole district intended to be served indicate the advisability to making the wharf in deep water at Pelican Point, and so getting rid of the liability of having to periodically dredge the artificial channel, of avoiding for vessels the delay and difficulty there might be of navigating the dredged channel, either at night or during strong winds; for a channel 100 feet wide—as here estimated for—is not easily navigated in strong winds. At Pelican Point there is room for several vessels to anchor in deep water; no dredging is required, and vessels can come to the wharf and leave with ease and despatch. The extra length to cart produce over the site at C. would be one mile 50 chains, but with a good metalled road this should not be a serious objection to give access to a very fair deep-water port, from which steamers up to 800 tons would readily carry the products of the district to all intercolonial ports.

For the year 1899, the following is a summary of the products of this district:—

Agricultural products and blackwood logs .....	3420 tons
Sawn timber, 2,880,000 sup. ft., or.....	7200 tons

The timber trade is greatly hampered at present by the want of a wharf in deep water. Mr. G. Lee, the owner of the tramway and sawmills, says, that if a deep-water wharf could be obtained, his export of timber in two years would be increased to 21,600 tons, or 8,600,000 superficial feet. The value of the products is expressed thus:—

Farm products and blackwood logs .....	£7427
Timber, 2,880,000 sup. ft., at 6s. ....	£8640

With a deep-water port the timber might reach the value of £25,000, and it is assumed that, in time, the products of much good land in the west would take advantage of this port.

I have the honour to be,

Your obedient Servant,

C. NAPIER BELL, *M. Inst., C.E.*

*Stanley, 27th January, 1900.*

*To the Hon. the Minister of Lands.*

# DUCK RIVER

SCALE 1 INCH = 1 MILE

The banks and the deep water laid down by Sketch and are only approximately correct.

(Sig<sup>d</sup>) C. Napier Bell

M. Inst. C. E.

25<sup>th</sup> Jan<sup>y</sup> 1900

