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T A S M A N I A.

H O U S E O F A S S E M B L Y.

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H A R B O U R S , N O R T H W E S T C O A S T :

C O M M A N D E R S T A N L E Y ' S R E P O R T.

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Laid upon the Table by the Minister of Lands, and ordered by the House to be printed, July 19, 1881.



*Sandy Bay, 5th April, 1881.*

DEAR SIR,

WITH reference to our conversation on the subject of the comparative suitability of the Rivers Leven, Penguin, Emu, and Inglis as ports for small craft, (a depth of 10 feet at high water being required), I will undertake to report on the above-mentioned places, and to give a rough estimate of the probable cost of making a safe harbour at each place, for the sum of £60 and expenses; but I wish particularly to let it be understood that any report based upon other than careful and accurate survey is not incontrovertible. Nevertheless, should my terms be accepted, I will do my best to make the reports as reliable as possible under the circumstances.

I am, &c.

*The Hon. C. O'REILLY.*

H. J. STANLEY.

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*Lands and Works Office, Hobart, 8th April, 1881.*

SIR,

REFERRING to your letter of the 5th instant, in which you offer to undertake to report on the comparative suitability of the River Leven, Penguin Creek, River Inglis, and Emu Bay on the North Coast of Tasmania, and to give a rough estimate of the probable cost of making a safe harbour at each place (depth of water 10 feet at high tide being required) for the sum of £60 and your expenses paid, I have to inform you that the Government accept your offer to furnish Report and Estimates on those places for that sum.

Relying on your assurance that you will do your utmost to make the Reports as reliable as possible under the circumstances (in the absence of accurate and reliable survey), and that you will give the matter early attention,

I have, &c.

C. O'REILLY, *Minister of Lands and Works.*

CAPT. STANLEY, *R.N., Sandy Bay.*

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*Lands and Works Office, Hobart, 19th April, 1881.*

SIR,

I HAVE the honor to inform you that Capt. Stanley, R.N., has been employed by the Government to make a thorough marine survey, with soundings, of the River Mersey at Port Frederick, to show the channel between Torquay and Formby and the Ballast Ground at Latrobe, together with soundings off Torquay, Formby, Horse-head Creek, and the Ballast Ground at Latrobe, to enable the Government to decide upon the relative advantages of the above places as to wharfage or anchorage ground for trading vessels when once across the outer bar.

Capt. Stanley has also been employed by the Government to report on the comparative suitability of the Rivers Leven, Penguin, Inglis, and Emu Bay, on the North West Coast, and to give a rough estimate of the probable cost of making a safe harbour at each place (depth of water 10 feet at high tide being required), to enable the Government to decide as to the adoption of a road to connect Mount Bischoff with the best port of shipment.

Will you kindly afford Capt. Stanley any reasonable assistance to attain the end in view with respect to either of the above ports coming within your jurisdiction?

I have, &c.

C. O'REILLY, *Minister of Lands and Works.*

JNO. HENRY, *Esq., Master Warden Mersey  
Marine Board, River Don.*

*Mersey Marine Board, River Don, 23rd April, 1881.*

SIR,

I HAVE the honor to acknowledge receipt of yours of 19th instant, missent to Emu Bay, in which you advise the appointment of Capt. Stanley to survey Mersey and other rivers, and request that I will render him assistance in carrying out his work on rivers within the jurisdiction of the Mersey Marine Board,—which I will have pleasure in doing.

I have written Capt. Stanley to Latrobe informing him of the receipt of your letter and placing such help as I can render at his disposal.

I have, &c.

JOHN HENRY, *Master Warden.*

*To the Hon. the Minister of Lands and Works, Hobart.*

*Hill Side, Sandy Bay, 8th June, 1881.*

SIR,

I HAVE the honor to forward herewith Reports on the Rivers Leven, Inglis, and Penguin, and Emu Bay.

I have, &c.

H. J. STANLEY.

#### REPORT ON THE RIVER LEVEN.

THE mouth of this river, which is open to the north-eastward, lies between masses of irregular and pinnacle shaped rocks and ledges, between which is a coarse sandy bar having ordinarily at low water spring tides, according to report, about 2 feet upon it, and at its lowest on rare occasions, in seasons of drought, as little as 7 or 8 inches; it is considered very rarely to have less than 9 feet over it at high water, and generally to have 9 feet 6 inches; the lowest tides are said to occur in October and November, whereas in the Mersey River they are said to occur in April and May, a discrepancy for which I am unable to account.

A rock called the Bar or Channel Rock lies a quarter of a mile in a north-easterly direction from the rock known as Black Jack, which has a white beacon upon it, and this bar rock is the principal danger in the Leven entrance. Another rock called the Half-tide Rock lies about half-a-mile to the eastward of the Bar Rock; this rock is sufficiently distant from the entrance not to form a danger if its position is known; its name signifies its depth. The Bar or Channel Rock dries one foot at low water, and in respect of its hidden character at nearly all times of tide, as well as in respect of its position, may well be considered a serious obstacle to navigation. Black Jack Rock with its beacon is an excellent guide, and outside of it and the bar there is reported to be very fair temporary anchorage in fine weather for vessels awaiting the tide; when Black Jack is covered there is said to be 10 feet 6 inches on the bar. There is only one obstruction after the bar is crossed; this is the Mussel Bank, a bed of stones and gravel 390 feet long by about 30 feet broad, dry at low water.

The River Leven possesses almost the Government requirement: it has a depth over the bar of not less than 9 feet and frequently more than 10; it may also, without exaggeration, be considered a safe harbour if its conditional circumstances are taken into account, but it admits of improvement. The Channel Rock might very easily be blasted away, and the Mussel Bank could without any great expense be dredged to a depth the same as the bar. The disadvantage of the Leven is that, like all bar harbours, it is only navigable at or towards high water, and this disadvantage can only be remedied at a great expense.

To secure the Government requirement of 10 feet at high water the Leven bar would have to be deepened one foot, and the depth maintained, which would be a matter of considerable difficulty owing to the immense body of sand existing about the mouth of the river. I am quite unable, without more data and a careful survey, to estimate the probable cost, but it undoubtedly would be very great. I am also unable, without survey, to arrive at the quantities which would require to be dredged and blasted away to improve the Leven to the extent which I have suggested, but I think the work might be performed for a sum not exceeding £1000.

*8th June, 1881.*

H. J. STANLEY.

#### REPORT ON THE PENGUIN CREEK.

THE mouth of this Creek is sheltered by a small headland from westerly and N.W. winds, and a ledge of rocks which unfortunately covers at about half flood, protects it more or less according to the state of the tide. The ledge extends in a North-easterly direction  $\frac{1}{2}$  of a mile from the point west of the Creek.

A wooden jetty, the sides of which are sheet piled and the body filled with rubble, extends from the western side of the Creek's mouth in an E. and N. direction for a distance of about 336 ft., and then for a distance of 90 ft. E. and S., or E.S.E. Without this jetty, which was built to shelter the mouth of the Creek, or, more correctly speaking, the corner in which the Creek's mouth is situated, the Penguin would

have remained what it was originally, merely a landing-place in fine weather. At the end of the jetty there is only a drain from the Creek at low water, and the average rise being 8 or 9 ft. makes it just possible for vessels of that draught to run in alongside the jetty and lie aground while taking in or discharging cargo.

At about 100 ft. from the end of the jetty, and on the line of the continuation of its landward section, I found 14 ft. at high water. An extension therefore for that distance would ensure the Government requirement so far as the depth at high water is concerned; but as there is no deeper water under shelter of the jetty, and vessels would not be waterborne except at or near high water, it would be a straining of the meaning of the word "safe" to say that a safe harbour would thereby be obtained.

Owing to the limited nature of the present works the send of the sea towards high water is considerable, and vessels as they take or leave the ground must have their bottoms considerably scraped and injured. There is no bar at the Penguin; from the end of the jetty seawards the water first deepens gradually, and then more rapidly, until at about a quarter of a mile off there is four or five fathoms.

In order to obtain a safe harbour of the required depth it will be advisable to construct works to shelter ships afloat at all times of tide. I consider that any works constructed should be of such character and length as not only to permit of access to the jetty at high water but at any state of tide; vessels should be waterborne always. Fortunately, this desideratum may be easily and inexpensively obtained.

The present jetty answers very well the purpose for which it was designed, and cannot be considered an expensive structure, the total cost of 426 ft. having been only £2300.

An extension of the present works into a sufficient depth of water, and retaining the shelter of the half-tide reef, would be the best method of improving the Penguin. I am unable, without survey, to say what exact direction it would be advisable to take, but I think that an extension of 400 ft., at a cost of £3000, would secure a safe and useful small craft harbour.

This estimate is based on the cost of the present structure; but I would recommend that an extension, if made, should be 5 ft. broader on the top, that is 30 ft. instead of 25 ft., and that the hearting should be of larger rubble. I am in some slight doubts as to the danger to be apprehended from silt, but it is impossible from the cursory examination I made to arrive at a positive determination on this point. At all events, it would be quite possible to prevent an accumulation of silt by taking precautionary measures. It would be well to remove the present elbow in the jetty. The send of the sea will be averted, or at least reduced, by the extension I have suggested.

It will be quite feasible to make a larger harbour at the Penguin at a future date should the construction of marine works ever be thought desirable.

H. J. STANLEY.

8th June, 1881.

#### REPORT ON EMU BAY.

EMU Bay is well known as a wide bay, free from all danger, affording good anchorage except during easterly weather; it is 2 miles broad by  $\frac{2}{3}$  of a mile in depth, and is open to all winds from north round to east; it has a very even bottom and good holding ground. Its disadvantage is that during easterly weather embarkation or disembarkation is not always safe or possible, and great inconvenience is thereby often experienced. If the information I have been able to obtain is reliable, Emu Bays affords safe anchorage in all weathers to sea-going vessels of any size possessing good ground tackle, and my own judgment would lead me to the same conclusion. It possesses therefore the Government requirement: as, however, I have no doubt that my instructions were intended to embrace a consideration of shipping facilities such as would enable the port to be used in all weathers, I have taken the spirit rather than the letter of my instructions as my guide.

The jetty at Emu Bay, sometimes spoken of as the breakwater, is known to be formed of concrete blocks; it is about 144 feet long, and has 8 feet at low water at its extreme.

The water in the bay deepens rather suddenly to 25 feet at low water, which depth will be found at a distance of about 300 feet from the end of the jetty. The shores of the bay at that portion where marine works would have to be constructed is composed of basalt; it is therefore for the present unnecessary to enter into a consideration of conveying the water up into the land, and the only alternative is to consider what protection to shipping can be afforded by works stretching into the sea. The present jetty has been found very useful to lighters, but of little or no use to shipping except in a subordinate capacity. Owing to the nature of Emu Bay it is impossible to propose effective harbour works having for their object the Government desideratum of 10 feet at high water without proposing works of a still more extended and useful character.

If no works had been constructed I should have suggested the advisability of constructing less substantial works than those hereinafter recommended nearer the depth of the bay, but some expense having been already incurred it would be wise to utilise the works already constructed: this object can be effected by the construction of a protecting breakwater of *pierre perdue* run out from a position a short distance north of the jetty in such a direction as to shelter and landlock it, while at the same time admitting of extension without any divergence from a straight line. In the absence of a survey I can only form a very rough

estimate of the work and its cost, but as 25 feet of water is found at about 500 feet from the shore, it is probable that the breakwater would only need to be 700 feet in length, and this, with the addition of a few feet of wooden jetty thrown out from the present structure, would be sufficient for present requirements.

The breakwater should be faced with 5-ton blocks; it should be 12 feet broad at its summit, which should be 5 feet above high water, should have an outer or sea slope of 2 to 1, and an inner slope of 1 to 1.

I estimate the cost of construction of such a work at about £11,000, and anticipate no difficulty in getting 5-ton blocks of stone on the spot; the rubble would do for hearting.

This report is not intended to do more than give a rough outline of the marine works which I would recommend: it would be out of place at the present time, and I should be exceeding my instructions, were I to enter more into detail, neither would it be possible for me, without a large amount of conjecture, to frame a more copious report.

8th June, 1881.

H. J. STANLEY.

### REPORT ON THE RIVER INGLIS.

THE mouth of this river, which is open to the north-eastward, lies about three miles to the south-south-eastward of Table Cape, and is therefore protected by the Cape from all winds to the westward of north-north-west; it is further protected by a ledge of rocks running out to the north-eastward from the left bank of the river, upon which ledge an embankment of stone has been formed, the utility of which has been already experienced. It is also protected from the eastward by ledges of rocks extending from the shore in that direction. There is said to be no outer bar at the Inglis; the depth over the inner bar is 8 feet or 8 feet 6 inches. At the wharves in the river there is only 5 feet at low water and not much room in the stream, but I am informed that deeper water can be obtained. Vessels drawing 8 feet use the Inglis and lie aground while taking in cargo. On the right bank of the river a wooden embankment has been formed 450 feet long by about 12 broad, and this wooden embankment or training wall is said to have had the effect of driving the bar seaward for a considerable distance.

There will be no difficulty in improving the entrance of the Inglis to the extent of getting an additional 2 feet of water over the bar; the present training wall of wood may be improved upon and extended, which will have the effect of driving the inner bar farther out and increasing the depth of water upon it, but without a survey I am in doubts as to the exact distance which one wall should be from the other, and also as to the length necessary to attain the object in view; the farther the wall is carried out the greater will be the opposing force, and it may be that the extension will have to be greater than at first sight seems probable. It is therefore with great diffidence that I venture to give an opinion on this point. That the river's mouth can be improved I have no doubt whatever, but the extent of the improvement and its cost is somewhat doubtful.

The training wall on the left bank is in rather a dilapidated state and should be repaired; it should also be extended to the rock upon which the steamer *Murray* struck, but it is probable that an extension of the wooden training wall for a distance of 300 feet in an ascertained direction will be sufficient to produce a depth of two additional feet over the bar. A good substantial wooden training wall of sheet pile work, similar to the Penguin Jetty but not so broad, and hearted with heavy rubble, would be the cheapest kind of construction, and might be built for about £1000.

H. J. STANLEY.

### CONCLUSION.

IN character the Rivers Leven and Inglis resemble or compare with one another in the following respect: both are bar rivers, the former carrying 9 feet or 9 feet 6 inches, the latter 8 feet or 8 feet 6 inches. The mouth of each is considerably protected from the north west or stormy quarter, the River Inglis more, the Leven less, but the Leven being a much larger river is able to force for itself a deeper channel; when once across the bar the Leven has a further advantage in point of room and depth of water. The bar at either place much detracts from its merits, for the name "bar" is almost a synonym for difficulty and delay, and I have expressed an opinion that it will be no easy matter to get deeper water over the Leven bar. At the Penguin, although there is no bar, the requirement of the Government, 10 feet at high water, places this port in an identical predicament, the tide must be waited for, and unless a vessel draws considerably less than 10 feet of water, or can discharge or take in cargo in a very short space of time, she must ground alongside the jetty and wait 12 hours or more, probably 24 hours, for a high tide. As regards Emu Bay, were marine works constructed here it would undoubtedly possess advantages beyond the other ports, but those advantages would have been gained at an additional expense; on the other hand, no expense bestowed on the other ports would produce the same results as a corresponding expenditure on Emu Bay.

It may be quite possible that not having made surveys of any of these ports, and there being no charts to which I could refer for information, that in the cursory examination I have been obliged to make I have omitted to give due consideration to important points affecting the issue; if so I can only beg that every allowance will be made, and that it will be borne in mind that I have recorded my opinion that no report will be incontrovertible unless based on scientific survey.

Hill Side, Sandy Bay, 8th June, 1881.

H. J. STANLEY.