

850
14-3-1888
wanting

No 2365 W of 22 Sept 1887

Communicated to
the Supg. Engineer I
Circle -

1st Lt J. A. W.

Lt. I. C.
Eng.

Govt. of {1887} Madras.
MARINE.

Issued

Recd.

Encl.

G.O., 3rd August 1887, No. 355.

No 2365 W of 22 Sept 1887

AUGUST.

Ports.

Passing orders on certain proposals of the
Cocanada Groynes Committee.

with order

5TH MARCH 1888, No. 71, MARINE.

GOVERNMENT OF MADRAS.

MARINE DEPARTMENT.

READ—the following papers :—

From the Chairman, Groynes Extension Committee, to the Chief Secretary to Government, dated Cocanada, 21st November 1887.

I have the honor to draw your attention to G.O., No. 355, Marine, dated 3rd August 1887, in which it is written that the question of altering the designation and extending the sphere of operations of the Groynes Committee may lie over pending submission of Mr. Cockburn's report on the present dredger, and the decision which will then have to be come to regarding the fresh dredgers proposed.

2. The Committee feel that there has been an unnecessary delay, caused primarily by the somewhat misleading letter of the Acting Port Officer, Madras, No. 4470, dated 20th May 1887, in so far as he ought to have known that although our Priestman dredger had, when first received, not been properly understood by those placed in charge of it, it had for many months previous to May last, and long before the arrival of Mr. Cockburn, been doing most excellent service. In connection with this I would draw your attention to Vice-Chairman's letter, dated 21st September, to Executive Officer, and reply of latter, dated 22nd September 1887, copies of both of which are enclosed herewith.

3. I am given to understand that, up to the present time, say, nearly four months, since date of Government Order under reference, Mr. Cockburn has not received any instructions to make the report on the result of which depends the sanctioning or otherwise of proposals made in letter from Vice-Chairman to the Chief Engineer and Secretary to Government, Public Works Department, dated Cocanada, 24th March 1887.

ENCLOSURES.

From J. M. BRYCE, Esq., Vice-Chairman, Groynes Extension Committee, to the Port Officer in executive charge of Groynes Extension Works, dated Cocanada, 21st September 1887.

I have the honor to hand you herewith, for perusal and return, Proceedings of Government of Madras, dated 3rd August 1887, No. 355, Marine, and would refer you particularly to paragraph 5 of letter, dated 20th May 1887, No. 4470, from Acting Port Officer, Madras, to Chief Secretary to Government, from which it would appear that the writer of the letter in question was not aware that the Priestman's dredger at this port had been doing very good work for a long time.

It seems to me that the effect of the remarks in paragraph referred to has been to postpone further the already rather delayed sanction to carrying out suggestions of the committee with reference to alteration in scheme for improving our means of communication with the shipping.

Might I therefore ask you to be good enough to furnish me, for information of committee, with particulars as to when the dredger arrived, when she commenced work, the work she has done, and what she is capable of doing, were she properly supplied with punts.

From T. H. BAKER, Esq., Port Officer, in charge, Groynes Extension Works, Cocanada, to the Vice-Chairman, Groynes Extension Committee, dated Cocanada, 22nd September 1887.

With reference to yours, dated 21st instant, I have the honor to inform you that the Priestman's dredger was landed at this port during the month of March 1884, and that she commenced working on the 26th May 1886, from which time up to the end of last month 33,706 cubic yards of silt were removed. A punt of 22 cubic yards capacity can be loaded in 15 minutes

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when working in soft silt; it takes from 40 to 45 minutes when working in hard sand, such as forms the upper crest of the bar, after the end of the North-east monsoon.

I consider the Priestman's type of dredger the best I have ever had charge of; my experience of dredging extends over a period of ten years, during which time I have superintended the working of side ladder and centre ladder steam, centre ladder hand, and have had nearly three years' experience of the Priestman's dredger here, which I put together after taking charge of the port.

The difficulties that occurred when work first commenced were, first, want of beam in the boat, and inexperience of the handling of the machinery, but both these defects are now removed.

The dredger could fill on an average 3 punts of 24 cubic yards capacity per hour. The unloading of these punts takes a longer or shorter time proportionately to the distance the silt has to be carried; also during the prevalence of flood water in the river, it is a hard job to pole up against the current.

I am of opinion that each dredger should have at least six punts to carry away the silt.

From Captain H. A. STREET, Her Majesty's Indian Marine, Port Officer, Madras, to the Chief Secretary to Government, dated Madras, 4th January 1888, No. 19.

In continuation of my letter, No. 11438, dated 15th December 1887, I have the honor to acquaint you, for the information of Government, that a report on the Priestman's dredger at Cocanada has been received from Mr. Cockburn, copy of which I append, to the effect that since the 11th November 1886, the dredger has worked satisfactorily, but that owing to want of a sufficient number of punts, it cannot be worked up to anything like its full power, and that as the dredging work cannot consequently be carried on continuously, the consumption of fuel is high per cubic yard of mud raised. Mr. Cockburn, in conclusion, draws attention to various points which should be borne in mind in case of another dredger of a similar type being obtained from England.

2. As Mr. Cockburn's report on the working power of the dredger can, I submit, be taken as satisfactory, the proposals contained in clauses (c) and (d) of paragraph 2 of Mr. Bryce's letter, No. C., 24th March 1887, Government Proceedings, No. 355, 3rd August 1887, will now have to be considered, and with reference thereto I submit the following remarks:—

1st, as regards (c).—As it seems to be generally acknowledged that a system of permanent dredging is required to keep open the communication across the bar, extra dredging plant apparently is necessary; but as the dredger now in use has not been worked up to its full power, it seems to me that all that is requisite at present is to sanction (a) the construction of four additional punts, the cost of which may be taken at (Rs. 6,800) six thousand eight hundred approximately, and (b) one additional dredger with eight punts, the new dredger to be of a type to be fixed on by the Groynes Committee in communication with the Port Officer at Coconada and Mr. Cockburn.

2ndly.—The cost of a new dredger of Priestman's type and of the extra dredging plant required, which may be taken approximately at Rs. (32,000) thirty-two thousand, will apparently have to be met from the General Port Fund, but the sum which will have to be advanced for this purpose should, I submit, be recovered from the Cocanada Landing and Shipping Dues Fund.

3rdly.—For the reasons given by Mr. Marshall in paragraph 6 of his letter, No. 4470, 20th May 1887, and which reasons met with the approval of Government, I submit that no change be made in the designation of the Groyne Committee.

4thly.—With respect to the desire of the committee to be invested with the whole control of the dredging work, I submit that, as there appears no immediate necessity to pass orders on this point, it should be held over till I have had an opportunity of visiting Cocanada, and ascertaining personally how the arrangement would answer, especially as the Committee propose to place the Port Officer in executive charge of the work.

5thly.—With regard to the request contained in clause (b) for a portion of the advance originally sanctioned for the extension of the groynes, I would point out that the committee have not shown that the local landing and shipping dues are insufficient to meet the expenditure on account of the groynes, nor do they state for what purpose the advance asked for is required, and until the committee have clearly shown that an advance is actually necessary, I submit that their request should not be complied with.

ENCLOSURE.

From S. M. COCKBURN, Esq., Superintendent, Dredging Operations, to the Port Officer, Madras, dated Cocanada, 17th December 1887.

In answer to your instructions communicated in your wire, dated 15th instant, I have the honor to report on the working of the dredger here as follows:—

2. I inspected the dredger for the first time on 21st September 1886. It had ceased to work satisfactorily then for a short time owing to certain parts of the machinery having worn in a manner in which they should not have done, probably due to these certain parts not having been set properly after being moved for overhauling.

The dredger was repaired under my instructions, and set to work again on 11th November 1886. From that time it has worked without intermission up to the present; no trouble of any sort has been experienced, nor do I think any further trouble will arise; that which at first presented itself was due to the driver not understanding the machinery, and not to any fault in the dredger.

3. The dredger is sold by the manufacturers as capable of raising 500 tons of mud per day of 10 hours; as it raises mud at the rate of 600 tons per day easily, it is quite satisfactory in point of work done.

4. As reported by me on the 11th November 1886, the dredger cannot work up to anything like its full power for want of punts. Further, the consumption of fuel is high per cubic yard of mud raised, as the dredger is not able to work continuously. The dredger requires at least 8 punts of the size in use to keep it at work.

5. The following are the only points in which improvement could be made:—

1stly.—The barge should be of the beam arranged by the manufacturers for this size of dredge, 19'-0".

2ndly.—No reversing gear should be fitted to the engines; it is a useless complication, and not recommended by the manufacturers.

3rdly.—No steam lifting and lowering gear on the jib; this under the circumstances is also a useless complication and very much encumbers the machinery.

4thly.—The pulleys of the head of the jib should be bushed with steel. The friction wheel guard plates should be of stouter material, and a hood of corrugated iron should be arranged in the dredge to cover in the machinery as much as possible.

5thly.—Spare gear to the following extent should have been supplied:—

1 Spare lifting chain.	1 Spare set of brasses throughout.
1 „ lowering chain.	1 Spare set firebars.
1 Set of pulleys at jib head.	Half-dry spare gauge glasses.
1 Piston ring with fittings.	

In future orders being sent home for dredgers, I would suggest that I am allowed to submit a specification of what is required. When having Government orders through my hands in England, I have often experienced the greatest difficulty on account of scarcity of information being sent from this country, and much work is sent out in an unsatisfactory state in consequence.

From the Chairman, Groynes Extension Committee, dated Cocanada, 8th February 1888.

Telegram from the Chairman, Groynes Extension Committee, Cocanada, to the Chief Secretary to Government, Madras, dated 23rd February 1888.

My letter 8th. The little dredger now here quite inadequate for work required of it; state of our bar becoming very unsatisfactory. Hope definite orders will soon be passed.

ORDER—dated 5th March 1888, No. 71, Marine.

The Port Officer's letter read above, and Mr. Cockburn's report, will be communicated to the Groynes Extension Committee.

2. The Government are prepared at once to sanction for the present dredger the number of punts necessary to make up the full complement of eight. But a proper estimate must be submitted, and it should also be stated whether the old stone boats referred to in Mr. A. H. Deane's minute of the 17th January 1887, printed in G.O., 3rd August 1887, No. 355, cannot be converted into punts as Mr. Deane suggested. One or more punts may be put in hand in anticipation of formal sanction.

3. No new dredger can be sanctioned until the revision of Port Fund accounts ordered in paragraph 16 of G.O., 17th January 1887, No. 15, has been made and the correct financial position of the Cocanada port ascertained. The Government must also be in a position to judge of the ability of the Cocanada Landing and Shipping Dues Fund to repay with interest in a reasonable time such an advance as is recommended by Captain Street in his letter. For this purpose they must have a detailed account of the sums realized under Act III of 1883, and of the charges which have to be met therefrom.

4. Advantage should, however, be taken of Mr. Cockburn's presence to prepare a complete specification of the new dredger and other articles judged necessary. A separate specification of the spare fittings which Mr. Cockburn thinks the present dredger requires should also be made out.

5. Captain Street's suggestion, that orders on the committee's request for the extension of their sphere of operations should be deferred until he has had an opportunity of personally visiting the port, is approved.

6. The request made in paragraph 2 (d) of the Vice-Chairman's letter of 24th March 1887, No. C (G.O., 3rd August 1887, No. 355), will be further considered on receipt of the information referred to in paragraph 3 above.

(True Extract.)

H. E. STOKES,
Chief Secretary.

To the Chairman, Cocanada Groynes Extension Committee,
with copy of G.O., 17th January 1888, No. 15.
,, Port Officer, Madras.
,, Public Works Department.
Copy to the Collector of Godavari.

No 848W of 14th March/88

Communicated to
the Superintending Engineer
I Circle with reference to
G.O. 2365 W. of 2nd Sept/87.

184 W.L.C.B.
S.W.

Gobt. of {1888} Madras.
MARINE.

Issued

Recd.

Encl.

G.O., 5th March 1888, No. 71.

No 848W of 14th March/88

MARCH.

Cocanada.

Passing orders on proposals in connection with
dredging operations at —.

With order

S.E. I Circle

3RD AUGUST 1887, No. 355, MARINE.

GOVERNMENT OF MADRAS.

MARINE DEPARTMENT.

READ—the following papers :—

From J. M. BRYCE, Esq., Vice-Chairman, Cocanada Groynes Extension Committee, to the Chief Engineer and Secretary to Government, Public Works Department, dated Cocanada, 24th March 1887, No. C.

With reference to my letter of 23rd ultimo, I have now the honor to enclose copy of a letter from the Superintending Engineer, I Circle, No. 2760-G.D., dated 1st instant, from which you will see that Mr. Walch entirely concurs with the opinion of the committee, that under present circumstances it is advisable to stop the training walls and to adopt a system of dredging through the bar.

2. As you are now in possession of all papers and correspondence relating to this subject, I have the honor to request that you will be good enough to obtain the sanction of Government to the proposals made by the committee, which I may recapitulate as follows :—

- (a) That the groynes be completed only so far as foundations have been laid up to the present.
- (b) That if funds are available, a portion of the groynes be grouted or pointed with cement, as recommended by Captain Baker, subject to its being approved of by the Superintending Engineer.
- (c) That a system of permanent dredging be adopted to keep the bar open by means of two dredgers to be indented for, the present Priestman's dredger being retained for use in the river alongside of wharves, &c., the whole control of the work being placed under the existing committee, whose designation should be altered to that of "Committee for the conservancy of Cocanada river and its approaches."
- (d) That Government may be pleased to place at the disposal of the committee a portion of the advance originally sanctioned for the extension of the groynes, no part of which sum has yet been appropriated by the committee, the whole cost of the work up to date having been met from funds realised under the "Cocanada Landing and Shipping Dues Act III of 1883," imposed on themselves by the local mercantile community.

3. I have now only to request that you will kindly represent to Government the reasons of the committee for advocating an alteration to the scheme originally sanctioned, and I shall be obliged if you will take the necessary steps to obtain the consent of Government to have the wishes of the committee carried out with as little delay as possible.

ENCLOSURE.

From G. T. WALCH, Esq., Superintending Engineer, I Circle, to the Collector of Godavari District, dated Berhampore, 1st March 1887, No. 2760-G.D.

With reference to your letter, No. 13, of 29th January 1887, I have the honor to remark that you do not seem to have laid before the committee my No. 1826, dated 3rd November 1886, which I wrote at your request with reference to the minute of Mr. Deane, dated 22nd October 1886, and I shall feel obliged if you will do so now.

2. As there seems no probability whatever of funds being forthcoming for carrying the training walls out to the point "where the high level mud flat ceases and the soundings deepen almost suddenly from 4 feet to 7 feet low water spring tides," I quite concur with the opinion that it is useless carrying the walls or "groynes" any further; their extension will only by so much push the "bar," or place to be dredged, further out into the bay.

3. To dredge and keep open through the mud flat for two miles, or whatever the distance may be, a channel deeper than the general soundings (4 feet low water springs?) on that mud flat, is not feasible considering the liquid stuff that has to be dealt with and the extent of the flat on either side of the channel, but, as I understand, the proposal is merely to keep dredged an opening down to the level of that flat through the slight accumulation or "bar" which forms beyond the mouth of the Cocanada river as confined by the training walls or "groynes," and that this can be done I have no doubt; what the dredging power required may be I cannot give an opinion till I see some of the records of the size of the "bar" and how quickly it reforms.

4. I however quite support the suggestion of the committee to stop the training walls, "groynes," and to trust to dredging for the clearance through the bar.

Note by the Chief Engineer, Public Works Department.

In G.O., dated 24th August 1886, No. 469, Marine, certain changes in the constitution of the Cocanada Groynes Extension Committee were sanctioned; and it was decided to relieve the Cocanada Port Officer of the executive charge of the groynes extension, and to place at the disposal of the committee an upper subordinate of the Public Works Department for the supervision of the work. Accordingly, in G.O., dated 10th December 1886, No. 3275 W., Public Works, the services of Mr. Trutwein, Supervisor, 2nd grade, were placed at the disposal of the committee.

2. Subsequently, a change having taken place in the personnel of the committee, it was decided to replace the work in the hands of the Port Officer, and to relinquish the services of the Public Works Department Supervisor. The undersigned was present at a meeting of the committee held at Cocanada on the 18th February 1887, when the above resolution was adopted. At the same meeting it was proposed that the groynes should be completed only so far as the foundations had been completed, and to keep the bar open by a system of dredging, the Superintending Engineer having expressed an opinion that no appreciable improvement could be expected unless the training walls could be carried out to deep water, about two miles distant from the present walls.

3. The Vice-Chairman of the committee, with his letter, No. C. dated 24th March 1887, now submits a letter from the Superintending Engineer, I Circle, in which the latter decidedly expresses his opinion that, as there is no probability of funds being available to carry the walls into deep water, it is useless to extend them beyond their present length, as any such extension would only push the bar, or place to be dredged, further out into the bay. With this opinion the undersigned concurs. There is, as noticed in former reports, a mud flat of nearly two miles in length in which the depth of water is about the same as at the present end of the groynes, and it was noticed by Colonel Sankey, when lengthening the groynes was first proposed, that they would require to be carried beyond this flat to effect any considerable improvement in the depth of water throughout; the lengthening has already been carried beyond the coast line, and, as expected, the bar has simply been pushed forward; this bar is the only obstacle to boats of moderate size, and a passage through it can only be maintained by constant dredging. It has moreover been proved, in carrying out the extension thus far, that, owing to the stone sinking, the groynes will be much more expensive than anticipated.

4. Under these circumstances, the undersigned supports the committee's proposals as set forth in paragraph 2 of the Vice-Chairman's letter of the 24th March 1887, and recommends them for the sanction of Government.

OOTACAMUND,
15th April 1887.

(Signed) J. O. HASTED, Colonel, R.E.,
Chief Engineer, P.W.D.

No. 16-D.

MEMORANDUM.

Transferred to the Marine Department for consideration.

2. Extract of the Minutes of the meeting of the Cocanada Groynes Extension Committee held on the 18th February 1887, with the papers received therewith, are forwarded for information.

OOTACAMUND,
15th April 1887.

(Signed) J. O. HASTED, Colonel, R.E.,
Secretary to Government, P.W.D.

To the Marine Department, with original papers.

ENCLOSURES.

From W. A. HAPPELL, Esq., Collector of Godavari, to the Superintending Engineer, I Circle, dated 27th October 1886, No. 175.

I have the honor to enclose copy of a minute drawn up by Mr. Deane for the consideration of the Groynes Extension Committee, and request you will be good enough to favor me with your remarks.

MINUTE by A. H. DEANE, Esq., Member of the Groynes Committee, dated Cocanada, 22nd October 1886.

Before applying to Government for the services of an upper subordinate of the Public Works Department to carry out the extension of the groynes, I would suggest that the whole subject be discussed at a special meeting of the committee.

I believe that, in the opinion of more than one member, it is doubtful whether the original design, if carried out in its entirety, will give the desired result, inasmuch as, after spending a large sum of money on the groynes, it will probably be necessary to supplement it by a system of continuous dredging.

Although unable to claim any personal knowledge of the subject, yet, I believe that I am correct in stating that, so far, the result obtained is not all that was anticipated, and that the depth of water at the end of the groynes, as they stand now, is less than was expected.

It is then a question whether it would not be advisable to modify the original scheme, by stopping the extension of the groynes, after curving them at a certain point, and by adopting a system of permanent dredging. With the means at the disposal of the committee, it would perhaps be possible to buy two dredges of approved type, and to keep them regularly at work at the entrance of the river.

The opinion of the Superintending Engineer, who is an *ex-officio* member of the committee as professional adviser, might be obtained before Government are addressed on the subject.

If the question is re-opened, the members of the committee might then consider whether, under totally different conditions, the services of Captain Baker might not be retained with advantage.

The anomalous position of the Port Officer as executive member of the committee under the old arrangement was found to be very unsatisfactory, but as far as the actual work was concerned, I believe it is generally admitted that it was ably carried out by Captain Baker, at a cost considerably less than the committee will have to pay for the services of a Public Works Department subordinate, whose work it will be almost impossible to check. If it were possible, then, to obtain the sanction of Government for the committee to employ Captain Baker in his private capacity (entirely apart from his connection with the Marine department) to carry out the port improvements, under the committee, to which he would be responsible, but of which he would not be a member, for the same honorarium as he received hitherto, it might perhaps solve the difficulty, and I beg that the question may be considered by the committee at their next meeting.

From G. T. WALCH, Esq., Superintending Engineer, I Circle, to the Collector of Godavari District, dated Dowlaishweram, 3rd November 1886, No. 1826-G.D.

With reference to your No. 175, dated 27th October 1886, I have the honor to say that to form an opinion on the points dealt with by Mr. Deane in his minute, it is necessary that I should see the soundings showing the state of affairs when the "training walls" extension was commenced, and what it is now.

2. As stated in paragraph 3 of my letter to the Chief Engineer, Public Works Department, printed with G.O., No. 3275-W., of 12th December 1882, I should not expect any appreciable improvement unless and until the training walls are extended "to a point where the high level mud flat ceases and the soundings deepen almost suddenly from 4 feet to 7 feet low water spring tides;" that point is almost 2 miles distant from the present walls. See General Sankey's note (paragraph 28) printed with G.O., No. 426, dated 26th August 1880.

3. Till that point is reached it is almost certain that extending the training walls will simply by so much push forward what is called the "bar;" when that point is reached, there is a fair probability that the current which causes the sudden deepening there will suffice to remove the deposit which is carried out by the current between the training walls.

From A. H. DEANE, Esq., to the Vice-Chairman of the Cocanada Groynes Extension Committee, dated Cocanada, 17th January 1887.

With reference to my minute, dated 22nd October 1886, I have now the honor to request that you will be good enough to lay before the committee the following information obtained from Captain Baker to the Executive officer in charge of the work until relieved on the 11th instant.

First—Cost of work done to date.—This will be best explained by the statement below:—

North Groyne.	South Groyne.	Total.	Cost. RS.
Original Estimate—			
1,900 feet.	2,500 feet.	4,400 feet.	72,900
Work done—			
385 feet finished	600 feet finished	985 feet	} 30,217
+111 feet foundation.	+232 feet foundation.	+343 feet foundation.	

for which 14,257 cubic yards of stone have been used. From the cost of work done so far, Rs. 30,217, may be deducted Rs. 5,638, being cost of boats used for carrying the stone, leaving Rs. 24,579 as the net cost to date.

It is evident from the above that the cost so far is proportionately far in excess of the estimate, and this is caused—

- (1) by constant sinkage on the south groyne.
- (2) by having had to alter the section from a "flat to an arched one," the latter having been found to withstand the heavy seas in the gales experienced here in November and December last.

Secondly.—The benefit derived by the extension of the groynes so far has been the gain of deeper water between the training walls, but the bar has only been driven further east, and Captain Baker estimates that, to obtain the end for which the scheme was adopted, it will be necessary to carry out the groynes into deep water nearly two miles out from where they are now, which will involve an immense outlay, the bottom being liquified mud in which foundations will always be liable to sink. As I have stated before, I have neither the wish nor the ability to offer an opinion on these matters, but I beg that they may be referred to Mr. Walch, Superintending Engineer of this division, who is the professional adviser to the board, and if he confirms Captain Baker's statement, I think that the committee will see the advisability of proposing to Government a modification of the original scheme and the adoption of a system of dredging, as already proposed in my minute of 22nd October 1886.

Captain Baker has kindly given me the following details of the proposal which he intended submitting to the committee:—

- (1) To finish the groynes as far as the before-mentioned foundations are laid, and to finish them by an elevation seven feet above H. W. M. S. T. for lights.
- (2) That the whole of the north side and top of north groyne and part of the north side and top of south groyne be pointed or grouted with cement.
- (3) That two new dredgers be purchased similar to the "Priestman" now in use. The stone boats could be converted into mud punts, and four or six more should be built

This plant to be used solely to keep open the communication across the bar, while the present dredger can be utilised in the river alongside the wharves, &c., the whole being placed under the existing committee, the designation of which might then be altered to "Committee for the conservancy of Cocanada river and approaches."

In conclusion, I beg that you will be good enough to convene a meeting of the committee to discuss the matter, and I will endeavour to obtain further information as to cost of dredgers, establishment, &c., in time to place it before the meeting.

INFORMATION regarding dredging.

	RS.
* (1) Annual cost of dredging establishment	1,368
† (2) Contingencies	600
‡ (3) Wood for firing	500
Annual cost	2,468

To this amount must be added the cost of discharging punts, which is done by contract at Rs. 1-3-0 per punt of 22 cubic yards, so probably Rs. 1,500 to Rs. 2,000 will be absorbed for this purpose, but it solely depends on circumstances. I should estimate dredging expenses approximately at Rs. 4,000 per annum for one dredge.

Provision must also be made for constructing mud punts, each of which will cost about Rs. 1,600, made of teak of the muster now in use, but four of the existing stone boats can be converted into good punts at the approximate expense of Rs. 500 per boat. The other old boat can be sold for what it will fetch. One dredge might be obtained at once, the other to follow; the present dredge, not having much beam, could be utilised inside the bar, the one to be ordered must have proper beam and can be worked on bar, an extra dredge being kept in reserve to take the place of any of the others when under repair.

INFORMATION regarding revetting foreshore on north side.

Approximate Estimate.

	RS.	A.	P.
2,656 cubic yards, at Rs. 1-2-0 per cubic yard	2,988	0	0
Cost of labor for 885 cubic yards, at 8 annas per cubic yard	442	0	0
Cost of 66 casks cement for 5,976 square feet, at 90 square feet per cask, at Rs. 10-8-0 per cask	693	0	0
Cost of labor for cementing 5,976 square feet, at Re. 1 for 90 square feet	66	0	0
Cost of 33 garces of sand, at Rs. 2-8-0 per garce	82	8	0
Cost of watering, &c.	25	0	0
Total	4,296	8	0

APPROXIMATE Estimate for pointing 800 running feet on North and 400 running feet on South Groynes from L. W. M. S. T. to top and side.

	RS.	A.	P.
Cost of 240 casks cement for 21,600 square feet at 90 square feet per cask, at Rs. 10-8-0 per cask	2,520	0	0
Cost of labor for the above, at Rupee 1 per 90 square feet	240	0	0
Cost of 120 garces of sand, at Rs. 2-8-0 per garce	300	0	0
Cost of watering, &c.	50	0	0
Total	3,110	0	0

* (1) Establishment—	RS.	† (2) Contingencies—	‡ (3) Wood.—This is obtained from Government Reserve Hope Island, and is supplied by contractors and stocked at site near Custom house at 6½ annas per cubic yard; the present dredge consumes 3 cubic yards daily.
1 Serang	20	Tallow.	
1 Driver	16	Waste.	
2 Firemen at Rs. 10 each.	20	Oil for lamp.	
6 Lascars at Rs. 8	48	Oil for engine.	
1 Punt Tindal	10	Minor repairs.	
Total per month	114	Rope and chain.	

The carrying out of the above works will avoid the expenditure of any large sum for maintenance, and will certainly tend to reduce the danger of any material damage being done to groynes during gales of wind. In framing the estimate, care has been taken to avoid the chance of supplementary estimates being necessary, but at the same time it must be borne in mind that they are only approximate.

COCANADA,
19th January 1886.

(Signed) T. H. BAKER.

EXTRACT of Minutes of meeting of the Cocanada Groynes Extension Committee held on Thursday, 20th January 1887, at 7 A.M., at Messrs. Hall, Wilson and Company's office.

Read Mr. Deane's minute of 20th October 1886, and his letter to the Vice-Chairman, dated 17th January 1887, in continuation of the same proposing the following alterations to the present scheme of extending the groynes:—

(a) That the groynes be completed only so far as foundations have been laid up to the present, which will give a length of 496 feet on the north, and 832 feet on the south, groyne, and that they be finished there with a round elevation 7 feet above high-water mark spring tide, on which lamps will be placed, so as to indicate the approaches to the river.

(b) That if funds are available, the whole of the north side and top of the north groyne, and a portion of the north side and top of the south groyne, be pointed or grouted with cement.

(c) That a system of permanent dredging be adopted to keep the bar open by means of dredgers to be indented for, the present Priestman's dredger being retained for use in the river alongside of wharves, &c., the whole control of the work being placed under the existing committee, whose designation might be altered to that of "Committee for the conservancy of Cocanada river and its approaches."

(d) That in the event of this suggestion being adopted, the services of a Public Works Department Supervisor would no longer be required, but that the Port Officer, Captain Baker, be asked to resume the superintendence of the work on the same remuneration as formerly on the distinct understanding that, so far as his services are concerned, he is to be solely responsible to the committee. The committee, having carefully considered these suggestions, supported by statements of the cost of work completed up to date, estimated cost of dredging, &c., are unanimously in favor of the same.

Resolved—that the Vice-Chairman communicate the views of the committee to Mr. Happell, with a request that they may be submitted with as little delay as possible to the Superintending Engineer for his professional opinion, and that, in the event of its being favorable, Government be at once addressed on the subject in order to obtain their sanction to the proposal.

EXTRACT of Minutes of meeting of the Cocanada Groynes Extension Committee held on Friday, the 18th February 1887, at 8 A.M., at Messrs. Hall, Wilson and Company's office.

Present: Colonel Hasted, R.E., and Captain Taylor, R.N.R., as visitors; Messrs. Happell, C.S., Bryce, Innes, Deane, M. Ramannah, and V. Perraz, as members of committee.

The minutes of last meeting having been submitted to Colonel Hasted and Captain Taylor. Colonel Hasted remarked that it would be necessary to obtain Mr. Walch's opinion on the subject, and to submit it to Government; without full information, it would be impossible now to come to a decision, but he (Colonel Hasted) is inclined to agree with Mr. Walch that, until deep water is reached, apparently about 2 miles out, scarcely any appreciable effect will be made on the bar. Colonel Hasted would further suggest to the committee that, in submitting their proposal to Government, it would be well to draw up a statement of their reasons for advocating the alteration of the above scheme.

Captain Taylor, in concurring with the above remarks, stated that if the system of dredging recommended by the committee is approved of by the Chief Engineer, he thought that there would be no difficulty in obtaining the sanction of Government to transfer the funds to the new scheme; it would be necessary to alter the designation of the committee into that of "Committee for the conservancy of Cocanada river and its approaches." Regarding the question of supervision of the work, the committee adopted the following resolution proposed by Mr. Deane and seconded by Mr. Bryce:—

"That whether the alternative system of dredging be adopted or not, the committee are of opinion that it would be advisable to retransfer the executive portion of the work to Captain Baker, on the understanding that, so far as his services in connection with this particular work are concerned, he will be responsible to the committee."

Captain Taylor, being present, stated that he was willing to assent to this arrangement, and Colonel Hasted promised to take the necessary steps to retransfer the present Superintendent, Mr. Trutwein, to the Public Works Department.

From T. E. MARSHALL, Esq., Acting Port Officer, to the Chief Secretary to Government, dated Madras, 20th May 1887, No. 4470.

I have the honor to acknowledge, and to return, the papers marginally noted, received under your endorsement, dated 5th May 1887, for report.

Letter from the Vice-Chairman, Groynes Extension Committee, No. C, dated 24th March 1887, and enclosures.

Note by the Chief Engineer, Public Works Department, dated 15th April 1887.

2. They contain certain proposals made by the Cocanada Groynes Extension Committee, through the Secretary to Government, Public Works Department, and Chief Engineer, for the sanction of Government, marked A, B, C, and D, and have been generally approved of by that officer.

3. In A it is proposed that the groynes be completed only so far as foundations have been laid up to the present. I find, from information just received by wire from the Port Officer, that the bar of the Cocanada river bears East 231 feet distant from the end of the north groyne, and that the least water on it is "5 feet springs." The south groyne has been extended up to date 378 feet further seaward than the north one, while its foundations extend 170 feet from its present end. The construction and gradual extension of these groynes, with the object of obtaining deeper water on the bar, has only resulted in that obstruction backing seaward from the training walls. In extending these walls, I would observe that the natural river has been transferred into an artificial one, with the groynes for its two banks, the bar backing and forming to seaward of its mouth, as with every Indian river. In the circumstances, I would respectfully submit, for the consideration of the Chief Engineer, after the experience gained at Madras and elsewhere, that, as an experimental measure at this stage, the construction of the north groyne be stopped at the point to which it has been constructed, and to extend the south groyne alone towards the bar as far as its foundations have been laid, in order to see what effect a single groyne would have on the bar, how far and in what direction it would move or recede, and whether any erosion would take place to the north of the south groyne, and on the bar itself.

4. With regard to proposal B, I would observe that "grouting," or pointing with cement, would be carried out above water, but, as the foundations of the groynes are said to be sinking, whether it would not be as well to postpone the work for a period, and then grout the walls after the work has settled.

5. C.—The dredging on the bar seems essentially necessary, but as a Priestman's dredger costs 20,000 rupees, and an engineer has had to be brought out from England on a salary of Rs. (500) five hundred per mensem to put them up, it would be more prudent to await the working of the one now being fitted, and judge by the results whether it would be advisable to get out another of the same pattern, for which the Port Fund would pay.

6. In regard to the designation of the committee, I would deprecate the title proposed by the committee being conferred on them, as it would have the effect of taking away the powers of the Conservator of the Port under Act XII of 1875, the same being claimed by the committee, who might more properly be designated a "Committee for the improvement of the port of Cocanada."

7. D.—I regret to say that the accounts of the port of Cocanada exhibited a debit balance of Rs. 80,630-13-5 on the 28th February last, and that as the committee had a balance to their credit of Rs. 5,635-5-2 on the same date from receipts under Act III of 1883, there appears to be no necessity for transferring any money to their credit until at least a moiety of this sum has been expended, it being always understood that the cost of any extra dredges that may have to be procured will be met by Government from the General Port Fund.

Note by the Chief Engineer.

The proposal made by the Cocanada Groynes Extension Committee which was supported by the undersigned was, that the groynes should be completed only so far as foundations have been laid to the present. The Acting Port Officer suggests that, as an experiment, the construction of the north groyne be stopped at the point to which it has been constructed, and the south groyne alone should be extended as far as its foundations have been laid.

2. The undersigned does not anticipate that the effect of the proposed arrangement would be to give a greater depth of water on the bar or to lessen the work which must be done in dredging, but there can be no objection to completing the south groyne so far as its foundations are laid in the first place, and noting the effect, before taking any steps towards completing the north groyne so far as its foundations are laid.

3. Pointing with cement is doubtless waste of money if the groynes continue settling, and the Acting Port Officer is right in considering that it had better be postponed until the work has finally settled.

4. With reference to the remarks by the Acting Port Officer on dredging, it is observed that an engineer was brought out from England to ascertain in what respect the Priestman's dredgers already sent out required alteration to fit them for the work on which they were employed, and when the result of his investigations is known, there should be no difficulty in fitting up any dredgers that may subsequently be obtained from England, in this country. The undersigned is not aware whether any alterations have been found necessary in the Priestman's dredger at Cocanada, but he has seen it working and believes that it is considered to work satisfactorily. Mr. Cockburn's report on it, however, had better be received before another dredger is ordered.

5. The designation of the committee would not, it is presumed, affect its powers.

OOTACAMUND,
17th June 1887.

(Signed) J. O. HASTED, Colonel, R.E.,
Chief Engineer, P.W.D.

No. 242-D.

Transferred to the Marine Department, with reference to endorsement in that department, dated 16th June 1887, on current No. 442, herewith returned with enclosures.

OOTACAMUND,
18th June 1887.

(Signed) J. O. HASTED, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Marine Department, with original papers returned.

From J. M. BRYCE, Esq., Vice-Chairman, Cocanada Groynes Extension Committee, to the Chief Engineer and Secretary to Government, Public Works Department, dated Cocanada, 15th July 1887.

I have the honor to enclose copy of a resolution passed at a meeting of the Cocanada Groynes Extension Committee held on the 13th instant, and with reference to it, beg you will kindly inform me if Government are taking any steps to carry out the proposals of the committee as set down in the minutes of the meetings held on the 20th January 1887 and the 18th February 1887, respectively, copies of which were sent to you on the 23rd February 1887, particularly with respect to obtaining dredging plant.

ENCLOSURE.

EXTRACT from Minutes of Meeting of the Groynes Extension Committee held on the 13th July 1887.

Resolved that the Vice-Chairman be requested to write to Government and ascertain what steps are being taken to carry out the proposals of the committee as embodied in their minutes, dated 20th January 1887.

No. 401-D.

Transferred to the Marine Department, with reference to this office No. 242-D, dated 18th June 1887.

(Signed) J. O. HASTED, Colonel, R.E.,
Secretary to Govt., P.W.D.
26th July 1887.

ORDER—dated 3rd August 1887, No. 355, Marine.

The views expressed in paragraphs 1—4 of the Chief Engineer's note of the 17th June 1887 have the approval of Government and should be carried into effect.

2. The question of altering the designation and extending the sphere of operations of the Groynes Committee may lie over pending submission of Mr. Cockburn's report on the present dredger, and the decision which will then have to be come to regarding the fresh dredgers proposed. The Government are, however, disposed to agree with the Port Officer that "Committee for the improvement of the port of Cocanada" would be a more convenient title than that proposed by the committee themselves.

3. The committee's resolution of the 18th February, regarding the replacement of the groynes work under Captain Baker, is approved.

4. The Port Officer, Madras, will submit, for the satisfaction of the committee, an account showing the total annual receipts and charges to Port Funds on account of the port of Cocanada for the last 10 years. A similar account should also be prepared with regard to the funds raised under Act III of 1883.

(True Extract.)

H. E. STOKES,
Ag. Chief Secretary.

To the Port Officer, Madras.

„ Public Works Department.

„ Chairman, Cocanada Groynes Extension Committee.

Copy to the Collector of Godáviri.

Exd. A. Raitt.