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TAMIL NADU ARCHIVES

GOVERNMENT OF TAMIL NADU

P.W.D DEPARTMENT

G.O. No. / B.P. No.	758—w	Press. / Mis.
Dated	13-3-1879	197

R.R.

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GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

13th March 1879, No. 758 W.

Buildings and Roads.

Civil Works.

Read the following paper :—

No. 166. From W. PARKES, Esq., M.I.C.E., Engineer-in-Chief, Madras Harbour Works, to the Acting Secretary to Government, Public Works Department, Buildings and Roads, dated Madras, 25th February 1879, No. 6 W.

I HAVE the honor to forward you herewith a report on the changes of the coast line north and south of the harbour for the consideration of the Government.

No. 167. ORDER THEREON, 13th March 1879, No. 758 W.

THE recommendations made by Mr. Parkes in this report are generally approved.

2. Constant attention should be directed to securing the accumulations which may be expected to be formed to the northward during every north-east monsoon.

(True Extract.)

(Signed) J. H. M. SHAW-STEWART, Colonel, R.E.,
Ag. Secretary to Government, P.W.D.

To the Superintendent, Madras Harbour Works.

Exd. C. Howarth.
Spare Copies

BUILDINGS AND ROADS.
CIVIL WORKS.

Govt. of [1879] Madras.

PUBLIC WORKS.

To

THE SUPERINTENDENT,

MADRAS HARBOUR WORKS.

Dated March 13th.

Recd.

Read.

G. O. 13th March 1879, No. 758 W.

MARCH.

Nos. 166-167.

Changes of the coast line north and south of the Madras Harbour.—Approves generally the recommendations made by Mr. Parkes in his report on the

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

13th March 1879, No. 758 W.

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Ag. Secretary to Government, P.W.D.

To the Superintendent, Madras Harbour Works.

Exd. C. Howarth.
Spare Copies

BUILDINGS AND ROADS.
CIVIL WORKS.

Govt. of (1879) Madras.

PUBLIC WORKS.

To

The SUPERINTENDENT,
MADRAS HARBOUR WORKS.

Dated March 11th

Read

Answered

G. O. No. 133, Revd. 1879, Pub. 765 W.

MARCH.

Nos. 166-167.

Charge of the establishment for the end ensuing Madras Harbour.

Forwarding the recommendations made by Mr. Parkes in his report on the

1879
No 166 W

Madras Harbour

From W. Parkes Esq. M. Inst C. E.
Engineer-in-chief, Madras Harbour Works

To
Colonel Shaw Stewart, R.E.
Secretary to Government,
Public Works Department
Buildings and Roads.

Madras, 25th February 1879

Sir,

In the Government order No 2456 W of 23rd November 1878, the question of protecting the shore to the Northward of the Harbour from the encroachments of the sea is deferred until my arrival in Madras. I have now given the subject my best consideration and have the honor to report as follows.

2. The matter is one which I have from the first expected would require special action on the part of the Government. In January 1876 I wrote to Mr May suggesting that a survey of the coast for two or three miles North of the Harbour should be made

made, and that he should inform himself of the proprietorship of the lands abutting on the shore and consult with the Government authorities as to what action might be necessary to prevent exorbitant claims from being enforced in case of damage by erosion taking place.

3. Mr. May replied that he had given instructions for the survey to be made and that he had ascertained that the Government had full rights over the foreshores.

4. The survey was begun, but owing to Mr. May's illness and death, throwing so much work upon Mr. Beardmore, and also to the fact of the native Surveyor attached to the Harbour Works Staff being temporarily withdrawn the survey was only completed previous to the South West Monsoon of 1876 as far as the Groynes extend North of the Harbour, and we have no positive record of the state of the shore to the Northward of that previous to November of that year.

5. At this latter date being myself in Madras, I carefully examined the line of shore near Cassimode, and made enquiries from the fishermen and others living in the neighbourhood as to the recent changes. The result was that their notice had evidently not been attracted by any such recent changes though they made frequent reference to the flooding and erosion produced by past cyclones. It was therefore evident that whatever changes might have taken place were small compared with those produced by causes independent of the Harbour Works.

6. At the same time the serious erosion which had taken place near the Railway Station and for some distance Northward, and to restrict which Mr. Beardmore had carried out some protective works had been so far recovered under the influence of the Northerly winds as to render any further immediate protective measures unnecessary and the matter was placed

placed in abeyance till after the action of the next South West Monsoon (1877) should be seen.

7. The South West Monsoon of 1877 produced much less effect than that of the previous year in the immediate neighbourhood of the North Pier. In consequence of this the survey was not extended along the beach towards Cassinode but there probably was some erosion which gave ground for the claims which Mrs. Sadler began to make in September 1877.

8. In 1878 the erosion near Mrs. Coleman's House again became serious, and with a view of protecting that and neighbouring properties a rough revetment of laterite was formed for a length of 1600 feet along the shore - At the close of the South West Monsoon also the line of shore was resurveyed for two miles Northward, and the survey has been again repeated since January.

9. The accompanying plan has been reduced from the several surveys made, so as to present in one view the total change which has taken place in the two years between November 1876 and November 1878 by accumulation to the South of the Harbour and between the Piers and by erosion to the North of the Harbour - The accumulations are coloured burnt sienna and the erosions red - The line of January 1879 lying generally within the coloured spaces is shown by a plain black line -

10. This plan exhibits clearly the action which is going on of accumulation on one side the harbour, and erosion on the other - The forces under which accumulation takes place to the South and erosion to the North being greater than those which have an opposite effect, the result must be an annually progressive one, by which land will be gained in one direction and lost on the other - Both effects must be I believe accepted as inevitable, and attention directed to utilizing the gain and minimizing the loss -

11. With respect to the gain on the Southward represented by the balance of the results of the two monsoons I would remark that the form it

take

takes is very favorable - The advance of the foreshore under the one monsoon, and its retreat under the other are alike clear and well defined, the line of beach and all the contours below water forming sharp angles with the line of the South Pier without irregular shoals or hollows. So long as this is the case the only evil to be anticipated is the one in the far off future of the advance reaching the seaward end of the pier, but this is too distant to require present attention.

12- I confess I am unable to look upon the advance of the shore line by annually decreasing increments as an evil although it is sometimes assumed to be so, unless it is permitted to become so by neglect of the obvious precautions to prevent the new land being devoted to unsuitable purposes - The portion which will abut on the South Pier will become ultimately of great value as possessing a harbour frontage and I would suggest that an ample area contiguous to such frontage be reserved for purposes

connected with the business of the Harbour. With regard to the remainder it is only necessary for me to point out that it will continue to accrue, and the proper authorities will no doubt be prepared to deal with it to the best advantage of the public.

13. The coloured space within the harbour limits is bounded by the lines of high water in March 1877 and March 1878 instead of November 1876 and November 1878 as is the case outside both south and north- The reason is that this area does really represent the increase which took place in that portion of the two years when the part in question was under the influence of the alongshore surf action - For a portion of the South West Monsoon of 1877 the South Surf Bank was only a partial barrier to the movement of sand from the southward, but as it advanced it became a complete barrier and since then there has been no increase of area of beach within Harbour limits, though the line of shore has changed its direction with the seasons - Indeed there has been a decrease since March 1878 which appears to be due in great measure

to

to the large quantities of sand which have been taken from this part of the shore for making blocks - As I think the width of beach within the Harbour is by no means excessive for the probable future requirements of the port this process will now be stopped and Mr. Thorowgood has arranged to obtain sand elsewhere-

14. I now come to the part of the shore North of the Harbour where what we have to deal with is erosion - There is no doubt that this at any rate is an evil, and one for which some watchfulness and judgement is required to reduce it to a minimum, but it is one which estimated at its worst is not of great magnitude - It may also I think be fairly considered as a price paid for the gain of valuable sites in and near the Harbour to the Southward.

15. It is no doubt possible to protect any given part of the shore from erosion at a certain cost, and the problem is to determine where the value of the property or interests preserved equals the cost of protection - There is I think no doubt that the half mile of shore immediately north of

of the Harbour including the Railway Station, the Sailors Home, Messrs Shands Cotton press, and Mr. Colemans House and Garden must be upheld - There then follows another half mile where property of some value may be threatened in two or three years, and the question of protecting it may then be considered with such new light as the observations made in that interval may throw upon it - Beyond that however there can I think be no doubt that the property is not worth the cost of preserving and that what has now to be done is to decide upon the system on which compensation for damage to private property shall be awarded when claims for it can be sustained -

16. Taking these three divisions seriatim I am of opinion with regard to the first that the proper system has hitherto been followed in making a rough longitudinal revetment rather than groynes - Groynes are efficient only where there is a free alongshore movement of sand under the surf action - This is not the case in either direction on the part of the

shore

shore in question - The movement from the south is entirely stopped by the Harbour Piers, and that from the North is checked by the Northernmost groyne, and will become more and more so as the beach recedes to the Northward under the preponderating action of the Southerly swell - There is probably in addition to the alongshore movement on the whole length of the coast a transverse movement also dependant upon the monsoons, but rather upon the direction of the wind blowing on shore in one case and off shore in the other by which different wave actions are produced - It is impossible to trace these movements under the highly complicated conditions which exist at the spot in question, but they probably account for some of the changes observed and they would obviously not be affected by groynes -

17. I therefore think that the present revetment should be completed and maintained - It will probably require feeding with more rubble stone during the next South West Monsoon and this should be freely supplied - Its bottom will ultimately find a bearing below the action of the waves - How much more stone may be required before permanent stability is attained it is impossible to say but as a length of about 1400 feet has been wholly and 200 feet partly made with 6669 tons of stone at a cost of about Rs 13,338 it would appear that we should not be entering upon any serious outlay - For the present I should recommend that it be surmounted by a rough parapet of as large blocks as can be conveniently placed on the top of the slope standing 3 feet high above the roadway - These would fall in the event of any subsidence of the mass below, and at once mark its place and assist in retarding its extension - This takes us as far as Groyne No 5 on the Plan close to the Police Jamedi and the Obelisk -

18. Beyond this the sand has accumulated under the influence of the Northerly winds, and Dr. Thorowgood will at once under authority

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authority already in his hands strengthen Groyne No 6 and extend those lately made beyond this so as to shut in the accumulation before the Southerly seas carry it away northward - These are I think the last protective works which can be usefully carried out during the present season - There is no property of value in danger for the next year or two, and in the meantime the record of the changes will give new materials for judgement whether any or what future protective works should be carried out as far as Cassimode village should be for the present an open question -

19. Northward of Cassimode I have little doubt that the question will be entirely one of compensation rather than of protection, and what I have to say on this will also apply to the portion of shore last spoken of, so far as protection works are not adopted -

20. The plan shows that a strip of land about 7500 feet along and averaging 125' wide has been eroded by the action of the two last monsoons - Some recovery has taken place especially towards the Southern end where the Southerly movement was arrested by the Groynes, but on the whole we must anticipate a further erosive action and presumably at the same annual rate as for the last two years - Whether it will assume the form of an extension of the action further northward or of a deeper indentation of the part already affected, is uncertain, but as an approximate basis for present calculations we may assume that 200 "grounds" of 2400 square feet each will be annually lost -

21. The ordinary purchasing value of a ground of cultivated land in that neighbourhood is about Rs 20 so that the actual annual loss may be taken at Rs 4000 - Of course the price if taking the form of compensation or compulsory purchase would be increased, and the action of the Government will no doubt be directed to reducing this increase to a minimum - It is with that view that I am now presenting the facts of the case as I have ascertained them by cautious enquiry -

22. Up to the present time no cultivated land has been attacked -

The

The nearest cultivation is shown by a green edging on the plan - The land already washed away was only valuable where occupied by fishermens huts, or as timber depots - The value for these purposes depends upon sea frontage rather than on area and therefore the shore line as it retreats, in great measure carries its own value with it - It is probable also that the tenure of such land even where claimed as having a substantial value is often of a doubtful character, and it must be held subject to the risks which have always existed of changes in the line of shore from natural causes.

23. It may therefore be assumed that any claims arising from an interest in sea frontage may be eliminated from the question and that the ultimate cost of the erosive action will be measured by the value of the nearest cultivation either washed away or indirectly injured or destroyed -

24. The value of a ground of land is about equal to the cost of two lineal feet of revetment, so that 1200 feet width of shore must be washed away before the value of land lost would be equal to the cost of saving it - This mode of

of protection is therefore obviously not applicable -

25. I think however a great deal may be done by taking advantage of the accumulations which will take place every North East Monsoon, and securing them as they accrue by means of Groynes - By this means the site of the erosion would be gradually pushed further Northward to land of less value, and even perhaps to such a distance from the Harbour as to be beyond the influence of its interception of the alongshore movement -

26 - In conclusion I beg to recapitulate my recommendations with regard to the portions of shore under erosion as follows.

1 - To watch carefully and record at the close of each monsoon the changes of the coast line -

2 - To complete and maintain the existing longitudinal revetment.

3rd - To secure such accumulation as may accrue to the Northward of the revetment during the North East Monsoons against the reverse action by two or three groynes each year advancing to the Northward -

4th - To make the best terms practicable as to compensation for any claims that may be substantiated for losses to property by erosion beyond the

the influence of the above protective measures.

I have the honor to be,
Sir,
Your most Obedient Servant
(Sd) H. Parkes.

From W. Parkes Esq M. Inst C.E
Engineer in Chief
Madras Harbour Works

To the acting Secretary to Govt
Public Works Department
(Buildings and Roads)

Madras 25th Feb 1879

Sir, I have the honor to forward you herewith a report on the changes of the Coast line North and South of the Harbour for the consideration of the Government

I have the honor to be
Sir
your most obedient Servant

W Parkes

Rec'd 13-3-79 No. 758

1879 Sept.
No. 1728

B+R
Civil Works

No. 758 Wd/13th March/79

From Mr Parkes.
No. 68 d/25 Feb/79

The recommendations made by Mr. Parkes in this report are generally approved.

Constant attention should be directed to securing the accumulations which may be expected to be formed to the north: = ward during every N.E. monsoon.

5/3. WL

Enclosure -
1 report

Sept. to A. Works/3

Sept 2 - A 7/79

With order

Cw 13728

Pobt. of 1879. Madras.

PUBLIC WORKS.

To

Dated

Issued

Recd. Encl.

14-3

G. O. 13 Mar 1879. No. 758 W

Nos.

Changes of the coast line
north & South of the Madras
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