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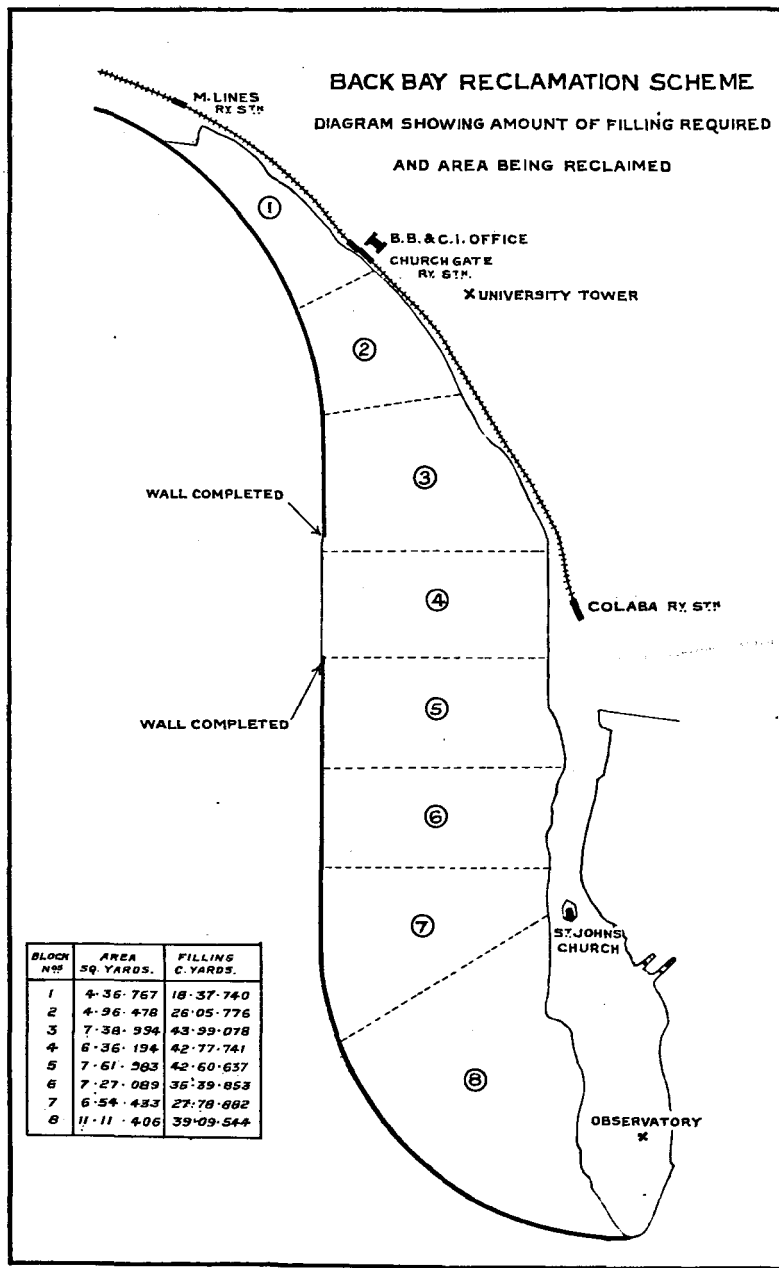
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REPORT 31651

This Committee was appointed by Government Resolution No. S.B. 949 of the 14th June 1926, the terms of reference being: "Having reference to the financial position of the Scheme, to consider and report to Government as to what, if any, further portion of the Scheme can be undertaken with reasonable prospect of reducing the present loss, and specially with reference to Blocks 1 and 2."

2. In January 1926, the Advisory Committee of the Development Directorate, who had been required "to enquire into the activities of the Development Department and to report to Government as to how far, and in what directions, such activities should be continued or eliminated", issued a report relating to the Back Bay Reclamation Scheme. This Report had been written whilst the dredging season 1925-26 was in progress, and the more favourable dredging results reported to have been obtained in that season were not therefore known to the Advisory Committee at the time they wrote their report. Thus there were grounds for thinking that these results might justify the radical revision of some of the conclusions to which the Committee had arrived, and on the 19th April 1926 Government appointed a small Committee of Engineers under the chairmanship of Mr. W. H. Neilson, Chairman of the Bombay Port Trust, to check and revise the estimates on which the conclusions of the Advisory Committee had to a large extent been based. We shall refer to this Committee hereafter as the Neilson Committee. Subsequently the terms of reference to the Neilson Committee were slightly modified with a view to enable that Committee to examine estimates for the completion of other blocks than those recommended to be completed by the Advisory Committee, and which this Committee might recommend should be undertaken. It will at once be clear that we could not be in a position to consider the Scheme as fully as our terms of reference required until the Neilson Committee had reported. The Report of the Neilson Committee was signed on the 30th July last, and our first task was to take that report into consideration.

3. **The Neilson Report.**—The Neilson Report is not a lengthy document. Their terms of reference did not specifically require them to give a programme or forecast of expenditure, and they did not do so. We have had to forecast financial results, and we have therefore found it necessary to consider programmes of estimated annual expenditure, since the Department is working on borrowed money and interest has to be paid. Though we have received all possible assistance from the Officers of the Development Department, we have not been able to base our conclusions on a programme of work approved by the Department, mainly because its programme is still more or less on the anvil as a result of its attention to past experience and recent criticism. We have conceived it to be our duty to accept the rates arrived at by the Neilson Committee, and their estimates of annual output where these are given. From the Neilson Report we calculate that 364,500 brass of consolidated filling can be dredged in one season from the harbour at a cost of Rs. 2·75 per brass; that 121,500 brass of consolidated filling can be dredged from Back Bay at a cost of Rs. 4·875 per brass; and we also take their estimate that the cost of murum filling is Rs. 5·79 per brass. We take these estimates purely on the responsibility of the Neilson Committee and are not competent to criticise them, and to the extent that those estimates are based on hypothetical considerations or are given with diffidence, our estimates also must be accepted with caution.

4. **Murum Filling.**—We find it necessary to make a few preliminary remarks specially with regard to murum filling. (a) We have ascertained from the Director of Development that although the present quarries at Kandivli are nearly worked out, there is available in their immediate neighbourhood more than sufficient murum for the work required, and we accept his statement that the rate of Rs. 5·79 per brass, which includes a charge for cost of acquisition or royalties, is a sufficient rate to assume for all necessary supplies. (b) We have also ascertained from the Director that the amount of murum filling that can be brought into the development area is about 150,000 brass per annum, representing a consolidated filling of 127,500

brass, but that certain negotiations are in progress with the B. B. & C. I. Railway under which the Director confidently expects that the carrying capacity of the existing rolling stock will be considerably increased. We have carefully considered this statement and have come to the conclusion that it would be safer not to assume that the additional carrying capacity for murum will materialise. We have therefore based our programme for murum filling on the present experience rather than on the future hopes of the Department. (c) We also find that the Neilson Committee allow for a topping of murum only one foot deep throughout the area. The Development Department now consider that in the area filled by dredging from the harbour, an average depth of two feet of murum topping will be required. The Neilson Committee's attention does not appear to have been specifically directed to this point, which has an important effect on the cost of reclamation, and as the departmental view appears to us to be reasonable, we have provided in our estimates for the larger quantity of the more expensive murum filling in the area to be filled by dredging from the harbour.

5. **Establishment charges.**—We have also raised the figure of 13½ per cent. for establishment charges, taken by the Neilson Committee, to 15 per cent. This higher figure is the one now taken in the departmental estimates, and we consider that looking to the fact that the actual programme of work which we shall recommend is a somewhat restricted one, being in most years considerably below the Rs. 30 lakhs of Capital Expenditure, which the Neilson Committee assume for next season, it is reasonable to suppose that the incidence of establishment charges will be somewhat higher. The approximate figures which we take for costs of developing the reclaimed areas are inclusive of establishment charges.

6. **Rate of interests.**—It is necessary to explain the rates of interest which we have assumed in our calculations. We have throughout taken a rate of 6 per cent. We are aware that the average rate which has to be paid upon the present outstanding debt is in excess of 6 per cent., and we have a reasonable hope that the rate during the years to come may be considerably less. We realise that a variation in this figure would make a large difference in our estimates, but we are dealing with large sums of public money and we have thought it necessary to take a safe margin. We feel that we would not be justified in recommending any part of the Scheme if we thought that the difference between failure and success depended on the accuracy of our forecast of the prevailing rate of interest, say to within a half per cent. As we have written back all our estimates of expenditure to present value, the fact that we have taken a lower rate than that actually being paid on the present debt does not affect the accuracy of our results.

7. We now come to the main body of our recommendations. We propose to give a very brief indication of the present financial position of the Scheme and to consider how that aspect is likely to be affected by the successive completion of different parts of the Scheme.

Present Financial Position

8. We start therefore with the fact that the total expenditure on all works, establishment, etc., connected with the Back Bay Reclamation Works up to 1st July 1926 is approximately Rs. 590·91 lakhs. If all work is immediately stopped and no further progress with the Scheme is made, the whole of this expenditure is lost without hope of recoupment, except such sums as can be realised from the sale of the dredging and other plant. The realisable value of the whole plant was estimated less than a year ago by the Advisory Committee to be Rs. 45 lakhs, and after discussing the matter with the Director of Development, we have resolved that it would be safer to make a further reduction in this amount, and we estimate the value at Rs. 25 lakhs. We do not think that the whole Department could be wound up and all work stopped earlier than 1st October 1926, and we are informed by the Audit Officer that by that date the probable total expenditure would have amounted to Rs. 605·71 lakhs. The unproductive debt, therefore, for which amortization proposals would have to be made, will amount on 1st October to over 580 lakhs. On this sum the annual charges for 30 years Sinking Fund improving at 4 per cent. would be Rs. 10·34 lakhs, and the annual interest charges at 6 per cent. would be Rs. 34·80 lakhs, or a total annual charge of Rs. 45·14 lakhs. After

1935, when the period of the Development Loan expires, the rate of interest would be somewhat lower. We take 30 years for the Sinking Fund because this is the period within which all Loans taken from the Provincial Loans Fund for unproductive purposes are required by the Government of India to be repaid. Throughout this Report, wherever the words "present value" are used, the value on the 1st July 1926 is meant.

Block 8

9. We have next considered what would be the position if Block 8 were carried to completion and sold under the existing agreement to the Army Department of the Government of India. We accept the opinion of the Development Department that it would not be economical to carry on further dredging in this area and that the Block should be completed by murum filling spread over two years. We consider that in this way the actual reclamation could be completed by the end of the financial year 1927-28, and that soon after that date the Government of India may be expected to take possession of the land and make the payment of Rs. 239·09 lakhs according to agreement. We have however not taken credit for this payment till the end of the year 1928-1929. In this way we calculate that the outstanding debt of Rs. 590·91 lakhs on 1st July 1926 would be reduced to Rs. 469·89 lakhs on 1st April 1929. The sum that would be required on the 1st July 1926 at 6 per cent. interest to produce Rs. 469·89 lakhs on the 1st April 1929 is Rs. 400·31 lakhs. The difference between this figure of Rs. 400·31 lakhs and Rs. 590·91 lakhs, namely Rs. 190·60 lakhs, represents the present value of the reduction of the debt, which would result from the completion of this block and the sale of it undeveloped to the Government of India. From the size of this figure it is obvious that even if the estimates for the completion of this block were very seriously exceeded, the gain by completing it instead of immediately abandoning all operations would still be very large, and we have therefore no hesitation in urging that the reclamation of this Block should be completed.

We also invite attention to the fact that the whole of Block 8 is not to be handed over to the Government of India; a strip one hundred feet wide along the sea wall, along which ultimately the Marine Drive may be extended, is to be retained by the Government of Bombay. We have been assured that the cost of maintenance of the sea wall in this area will be practically negligible.

Block 1

10. We next pass to the consideration of Block 1. We have taken from the Neilson Report our estimates of the total quantities required for the filling of this Block, of the amount of dredged filling that can be deposited in one year and the rate at which it can be obtained, the rate for dry filling by lorries, and also the amount of murum filling which will have to be brought by train, and the rate at which this can be deposited. We have taken care to see that the programme of actual expenditure on this Block will not conflict with that which has been proposed for Block 8, so that work can be carried on in these two Blocks simultaneously.

The programme of work is as follows:—

	Brass	Rate	Lakhs Cost
1st July 1926 to 31st March 1927—			
Dredged Filling . . . . .	.. 1,20,000	4·875	5·85
Lorry Filling .. . . .	.. 30,000	2·5	·70
S. W. Drain .. . . .	.. ..	..	·84
			7·39
Establishment at 15 per cent. .. . . .	.. ..	..	1·11
			8·50

	Brass	Rate	Lakhs Cost
1927-28—			
Dredged Filling	95,000	4·875	4·63
Lorry Filling	40,000	2·5	1·00
Murum Filling	22,000	5·79	1·27
			<u>6·90</u>
Establishment at 15 per cent.			1·04
			<u>7·94</u>
1928-29—			
Parapet			1·01
Murum Filling	18,000	5·79	1·04
			<u>2·05</u>
Establishment at 15 per cent.			·31
			<u>2·36</u>

Cost of Reclamation of Block 1.—From these estimates, we calculate that when these two blocks (1 and 8) have been reclaimed, undeveloped, and after allowing for the sale of Block 8 to the Government of India not later than the 1st April 1929, the outstanding debt will have been reduced from Rs. 590·91 lakhs to Rs. 490·76 lakhs, of which the present value is Rs. 418·10 lakhs. It will be clear, therefore, that by completing these two blocks undeveloped, there will be a reduction of loss equivalent at present value to Rs. 172·81 lakhs, even if no land in Block 1 can be sold; and since the reduction of loss by completing and disposing of Block 8 only was found to be Rs. 190·60 lakhs at present value, the extra cost of completing Block 1, undeveloped, is Rs. 17·79 lakhs reckoned on the 1st July 1926.

11. **Cost of Development of Block 1.**—We have then considered the cost of development of this block. We have assumed that looking to the present financial position, and the possibility that the Scheme would not be completed as a whole, it would be necessary to abandon the preliminary lay-out of this area prepared by Mr. Davidge, and we have had before us tentative lay-outs of Blocks 1, 2 and 7 prepared by Mr. Stamper, the Acting Consulting Surveyor to Government. We have considered these lay-outs, and while we are not in a position to approve of them in detail, we are of opinion that we can safely take from them approximate figures of the net area which will be available for sale as building sites, and we have based our calculations of the cost of development of the area on a consideration of these plans. The revised lay-out of Block 1 provides for the retention of a large recreation ground, over 32 acres in extent. We estimate that the cost of development of Block 1 including sewers, drains, roads, carriage ways, lighting, etc., will be about Rs. 15 lakhs, which we propose should be spread over a period of three years commencing from 1928-29, the year in which filling operations will be complete. The present value of this expenditure comes to Rs. 12·07 lakhs. The cost of reclamation has been shown above to be Rs. 17·79 lakhs, and the present value of the cost of reclamation and development is therefore Rs. 29·86 lakhs. We estimate that the net building area for sale in this block will be about 1·05 lakhs square yards, so that the present value of the additional cost per square yard of net building area over and above the amount which has already been spent comes to Rs. 28·44 per square yard. This figure includes the cost of the recreation ground amounting to 32·66 acres, or over 158,000 square yards. A cost of Rs. 28·44 per square yard in 1926-27 corresponds to a cost of Rs. 33·84 in 1929-30, when we propose that sales should begin and Rs. 45·34 in 1933-34, when we anticipate they would end.

12. **Realisations from Block 1.**—We consider that if only this block is completed and Block 2 is not proceeded with, an average net price of Rs. 70 per square yard could be obtained for the net building area of 1·05 lakhs square yards, and that the whole of this land could be disposed of in five years commencing from 1929-30, the year after the development of the area commenced. We have not thought it necessary to complicate our calculations by deducting from the receipts the cost of a small sales establishment, and a small percentage for brokerage. We realise that in estimating prices to be obtained for large quantities of land in the future no very exact estimate can be given, and we have thought it better not to suggest by the deduction of small expenses from large receipts a degree of arithmetical exactitude, which we are conscious that our estimates cannot possess. We have calculated that the amount of Rs. 73·5 lakhs, which would be received in varying amounts throughout the five years, would have a present value on the 1st July 1926 of Rs. 53·10 lakhs. As we have shown that the total developed cost of Block 1 would be Rs. 29·86 lakhs, it will be clear that the completion and development of this area and the sale of the building plots would result in a further reduction of debt of Rs. 23·24 lakhs, and that in addition the City would be the richer by the large recreation ground of over 32 acres. From these facts we have come to the conclusion that the reclamation of Block 1 should be proceeded with.

Block 2

13. When we came to consider the question with regard to Block 2, we found ourselves faced with very formidable difficulties, and we desire to make very clear the conditions and limitations to which our conclusions must be regarded as subject. In the first place, the Neilson Committee have not interpreted their terms of reference as requiring them to give any estimates with regard to this block, and although we might have required them to consider this question, the time at our disposal was brief, and we felt that the only certain result of this course would be that our own report would be considerably delayed. We examined Mr. Neilson, and learned that he did not consider that the rate of Rs. 4·875 which he had given for Block 1 would hold good for Block 2, but that the rate would probably be higher. The estimate of the Development Department for the cost of dredging in Back Bay is lower, and we felt that we could not at any rate take a lower figure than the Neilson Report had given for Block 1. We have taken as our estimate for consolidated dredged filling in this area Rs. 4·875 per brass, which is the same figure as for Block 1, and we have also taken the same output, 120,000 brass of consolidated filling, for a full dredging season in Block 2 as was estimated by the Neilson Committee for Block 1. But we take no responsibility for the accuracy of those figures. We invite attention to the fact that the cost of dredged filling is already very high for Block 1, and we apprehend that the output when pumping into Block 2 with a longer pipe line may be so considerably reduced as to bring the cost of dredged filling into this area above the price of dry filling, in which case, dredging might cease to be a profitable proposition. As regards dry filling with murum, we have, as stated in paragraph 4, ascertained from the Director that although the present quarries are nearly worked out, the Department will be able to obtain sufficient additional supplies from an adjacent site, and that the cost of Rs. 5·79 per brass is likely to prove adequate.

14. **Tentative nature of programme of work for Block 2.**—The programme on which we have worked does not provide for any work being done in this block in the season 1926-27 other than the completion of the storm water drain. We consider that the probable cost of dredging into this block must be carefully reconsidered in the light of the results of the dredging done into Block 1 in the coming season, and that dredging into Block 2 should not be commenced unless those results show that our estimate of the cost of reclamation of this block will not be so seriously exceeded as to affect our forecast of the financial results of its completion and development. We wish to state this very emphatically, and it is only on this understanding, and in the absence of any programme of work approved by responsible engineers, that we have ventured to put forward a working programme at all. We understand that tenders for dry filling by contract have already been called for by the department, and we assume that if the result indicates that the area can be completed by dry filling more cheaply than by dredging, then dredging operations will be abandoned. We think, indeed, that as a matter of general principle, the

possibility of continuing reclamation operations with the aid of contractors instead of departmentally should be thoroughly investigated.

15. Subject to the foregoing remarks, the following is the programme of work on which our estimate of the cost of completing Block 2 is based :—

<i>Expenditure on Block 2</i>					Lakhs
<i>1st July 1926 to 31st March 1927—</i>					
S. W. Drain	..	..	..	..	1·08
Establishment at 15 per cent.	..	..	..	..	·16
					<hr/>
					1·24
<i>1927-28—</i>					
		Brass	Rate		
Dredged Filling		25,000	4·875		1·21
Establishment at 15 per cent.	..	..	..	..	·18
					<hr/>
					1·39
<i>1928-29—</i>					
Dredged Filling	..	120,000	4·875		5·85
Murum Filling	..	100,000	5·79		5·79
					<hr/>
					11·64
Establishment at 15 per cent.	..	..	..	..	1·75
					<hr/>
					13·39
<i>1929-30—</i>					
Dredged Filling	..	120,000	4·875		5·85
Murum Filling	..	100,000	5·79		5·79
					<hr/>
					11·64
Establishment at 15 per cent.	..	..	..	..	1·75
					<hr/>
					13·39
<i>1930-31—</i>					
Dredged Filling	..	17,000	4·875		·83
Murum Filling	..	71,500	5·79		4·14
					<hr/>
					4·97
Establishment at 15 per cent.	..	..	..	..	·74
					<hr/>
					5·71

16. **Cost of Reclamation of Block 2.**—We calculate that if Blocks 8, 1 and 2 are carried to completion, and Block 8 disposed of to the Government of India when ready, these three blocks will have been reclaimed at the end of the financial year 1930-31, leaving an outstanding debt of 590·72 lakhs. The present value of this would be 447·90 lakhs. As we start with an opening debt on 1st July 1926 of 590·91 lakhs, the completion of these blocks undeveloped would, owing to the sale of Block 8 to the Government of India, still mean a reduction of loss equivalent at present value to Rs. 143·01 lakhs even if no land in Block 1 or 2 were sold. We have shown above in paragraph 10 that the reduction of the opening debt effected by the completion of blocks 8 and 1 only would be Rs. 172·81 lakhs. The present value of the extra cost of completing Block 2 is therefore Rs. 29·80 lakhs.

17. **Cost of Development of Block 2.**—The cost of development of this area has now to be taken into consideration. We have had to abandon entirely the original lay-out made by Mr. Davidge, under which this area was to be entirely devoted to public buildings, and we have assumed that it would be developed as a residential area. We have considered the tentative lay-out of this area made by Mr. Stamper, and we have taken from that, as the basis of our calculations, that out of the gross area of 496,000 square yards the net area available for building would be 264,000 square yards. The total cost of development of this area we estimate at 25 lakhs, which we propose should be distributed over three years commencing from 1930-31, the year in which reclamation would be completed. Although, as will be seen from the next paragraph, we consider that sales may go on over a somewhat extended period, we have thought it necessary to allow for the complete development of the area at a comparatively early date, because we hope thereby to stimulate sales. The present value of this expenditure is Rs. 18·46 lakhs. Adding this to the present value of the cost of reclamation (Rs. 29·80 lakhs), we get Rs. 48·26 lakhs as the present value of the developed cost of Block 2.

18. **Realisations from sales in Blocks 1 and 2.**—When we came to consider the disposal of the building land, we found it necessary to take Blocks 1 and 2 together. We do not think that the price of Rs. 70, which we have assumed for land in Block 1, will be materially affected by competition with land in Block 2, but the time necessary for its disposal may be affected. There is in Block 1 a greater proportion of land with a high site value because of its situation on the marine front, and we therefore take a lower figure for the average value of land in Block 2. We are of opinion that an average net price of Rs. 50 per square yard would be a reasonable figure to assume for this area, and that the sales in both blocks would be completed within twenty years beginning from 1929-30, which is the year after the development by road-making, etc., of the reclaimed area in Block 1 would be commenced. We think there is a possibility that the substitution of leases for outright sales might tend to reduce the period of sales, and we desire that this suggestion should be fully explored. The combined net building area in Blocks 1 and 2 would be 369,000 square yards and would yield 205·5 lakhs of rupees during twenty years from 1929-30. Assuming receipts to be evenly spread over this period, the present value of this sum would be 100·40 lakhs. The total developed cost of these areas, over and above money already spent, would be Rs. 78·12 lakhs (Rs. 29·86 for Block 1 and Rs. 48·26 for Block 2). The reclamation, development, and sale of these two blocks would therefore result in a further reduction, over and above that resulting from the completion and sale of Block 8 only, of the present outstanding debt by 22·28 lakhs.

19. It will be observed that the reduction of debt resulting from the development and sale of Block 1 only was 23·24 lakhs (see para. 12), so that the reduction to be hoped for from the completion of Blocks 1 and 2 is slightly less than that to be anticipated from Block 1 alone. It is for this reason that we think it necessary to lay stress on the tentative nature of the estimates on which the cost of reclamation of this block are based, and to insist that this block shall not be commenced unless that course is justified by a review of the actual results obtained in Block 1. Subject to this, we are prepared to recommend that the reclamation and development of Block 2 should be undertaken even at the slight loss of less than a lakh of rupees, which we estimate may result. We think such a small loss will be amply repaid by the general advantage to the City resulting from the extension of the marine drive and the development of what is, in its present unfinished conditions, the most unsightly portion of the sea wall and foreshore.

20. **Materials for Estimating Realisations.**—We think it advisable here to indicate the materials and considerations on which our estimates of the prices that may reasonably be expected to be obtained in this area have been based. We have had a map prepared by the Superintendent of Survey and Land Records, Bombay, showing the sales of land in the immediate neighbourhood of Back Bay during the last fifteen years, and we have considered the prices obtained in the light of our knowledge of the prevailing conditions of the land market at the time of sale. We have had maps prepared by the Bombay Port Trust, the Improvement Trust and the Bombay Municipality showing the land that they

have, or are likely to have, in the near future, available for sale or lease to the public, and we have considered in detail the extent to which those lands are likely to compete with the Back Bay Reclamation. We have considered the prices which these public bodies have obtained, or estimate that they will obtain, for these lands. We have also got such assistance as we could from a consideration of Municipal assessments of neighbouring properties. Estimates of the prices to be obtained and of the period for disposal, must, however, be based mainly on the view taken of the future course of trade and industry, and particularly of the cotton mill industry in Bombay, and on this point such accumulated experience as we jointly possess could be our only guide.

Block 7

21. **Urgency for decision regarding Block 7.**—We now come to the question whether the reclamation of Block 7 should be undertaken. There is no part of our recommendations to which we have given more careful consideration, because we realise that this is a matter on which Government must come to an almost immediate decision, and that whichever way that decision is given, there must be considerable waste of public money if it is delayed. This urgency arises from the fact that the dredging season commences early in October, and if material dredged into the area is not to be lost, first of all the sea wall must be sealed and then a cross-bund must be constructed to prevent the escape of the material. The first of these works is the more urgent, and will occupy about five weeks; the second is less urgent and can go on concurrently with dredging but will have to be done during this season, and will take about four months. These works will require about 79,000 brass of murum filling.

22. Here we must make a reference back to paragraph 4 (b) of this report, in which it was pointed out that the maximum output of consolidated murum filling which we were satisfied could be done in a single year was about 150,000 brass of material carried, representing 127,000 brass of consolidated filling. Now we have given reasons which we consider cogent for urging that block 8 should be completed with as little delay as possible. The programme provides for 98,000 brass of consolidated murum filling into block 8 from 1st July 1926 to 31st March 1927, and for 105,300 brass in 1927-28. 98,000 brass represents a full programme for nine months and it is clear, therefore, that unless the total production of consolidated murum filling can be increased beyond 127,000 brass per year, the amount of 79,000 brass required for sealing the wall and constructing the cross bund in Block 7 cannot be provided without carrying over the work in block 8 into another season. This will mean a delay of one year before block 8 can be completed and handed over to the Government of India, and therefore a delay of one year before the receipt of 239.09 lakhs can be counted on. This involves a loss of 14 lakhs of rupees in interest. We do not think the risk of this loss should be taken, and we are therefore of opinion that the sealing of the wall and construction of the cross bund in Block 7 ought in no case to be undertaken if there is any possibility of it delaying the completion of Block 8.

23. We have stated that negotiations are pending with the B. B. & C. I. Railway as a result of which the Director thinks that the department, by the middle of January next, may be able, with their existing rolling stock, to run four trains a day, instead of two and so considerably increase the supply of murum filling. If this possibility materialises quickly into something much more like a certainty than we think it has done at present, we are willing to concede that it might be reasonable to start work at once on block 7 if there were a likelihood of this block proving a financial success; but we are emphatically of opinion that this should not be done if it endangers the early completion of block 8.

24. **Working Programme for Block 7.**—On the assumption, then, that the required murum filling can be found for sealing the wall and constructing the cross bund in Block 7, without affecting the programme for block 8, we have considered the following programme for block 7, which is based on the findings of the Neilson Committee. The only change we have made is in the quantities of murum filling required, which we have increased because we accept the latest opinion of the department, based on their experience in Block 8, that an average of two feet of murum topping will be required over the area filled by dredging

from the harbour instead of the one foot for which the Neilson Committee provide. The programme for reclamation of this block is, therefore, as follows :—

Details of Expenditure on Block 7

Total Contents=2,778,882 cubic yards	..	..	750,000	brass, approx.	
Dredged Filling	..	..	553,000	"	"
Dry Filling	..	..	197,000	"	"
			750,000		
			Brass	Rate	Lakhs
1st July 1926 to 31st March 1927—					
Dry Filling (dealing wall and bund)	..	..	79,000	5·79	4·57
Dredging	..	..	315,000	2·75	8·66
					13·23
Establishment @ 15 per cent.	..	..			1·98
					15·21
1927-28—					
Dredging	..	..	238,000	2·75	6·55
Establishment @ 15 per cent.	..	..			·98
					7·53
1928-29—					
No work being done. (Dredged filling allowed to dry. All dry filling plant employed in Block 2)	..	..			Nil.
1929-30—					
Dry Filling	..	..	118,000	5·79	6·83
Parapet	..	..			·60
					7·43
Establishment @ 15 per cent.	..	..			1·11
					8·54

25. **Cost of Reclamation of Block 7.**—We have calculated the financial result of this additional work, and find that the result of completing blocks 8, 1, 2 and 7, undeveloped, and taking credit for the sale of Block 8 to the Government of India, would be to increase the opening debt of Rs. 590·91 lakhs on 1st July 1926 to Rs. 628·92 lakhs on the 1st April 1931. The present value on 1st July 1926 of Rs. 628·92 would be 476·86 lakhs, and the completion of these four blocks, undeveloped, and the sale of Block 8 to the Government of India would therefore result in a reduction of the present outstanding debt by 114·05 lakhs. We have already found that the reduction of debt by completing only blocks 8, 1 and 2, would be 143·01 lakhs (see para. 16) and the present value of the extra cost of completing Block 7 undeveloped is therefore 28·96 lakhs.

26. **Development of Block 7.**—The cost of development of this area requires careful consideration. The Neilson Committee has accepted the rough departmental estimate, based on the old layout of Mr. Davidge, that the cost of developing this block by roads, lighting, drains, etc., will be 26·43 lakhs. We have considered Mr. Stamper's revised layout, which however corresponds very closely with Mr. Davidge's because of the necessity of allowing for the possibility that at some period or other, however remote, the whole reclamation of Back Bay might be completed; and we do not consider that the cost of development will materially alter as a result of the revised layout. But we think it necessary to invite attention to the unsatisfactory position as regards the disposal of sewage in this area, and to point out the probability that the early development of this area would almost certainly involve the provision of temporary arrangements for sewage disposal,

of which the cost would be several lakhs of rupees. The Municipal Commissioner informs us that "the construction of the (Municipal sewage) outfall at Colaba was primarily intended to deal with the reclamation, and it is impossible to say when the work on this outfall will be commenced, until we are in a position to know whether the reclamation is to be completed in its entirety." The Municipal Commissioner's letters relating to sewage disposal in the reclamation area are printed as an appendix to this report.

27. We therefore apprehend that very considerable extra development expenditure in this area may be involved by the construction of the temporary sewage works. There is at present no main sewer in this part of the island which is capable of taking the sewage from this area. These temporary works would in all probability necessitate the laying of intercepting sewers and certainly the construction of a sump, a rising main, and a septic tank, and the installation of pumps. The cost of providing these and the annual upkeep charges have not been provided for in our estimate as we have no data on which to base them.

28. Apart from this we consider that 26·5 lakhs is a reasonable estimate for the cost of development of this area, and we consider that this expenditure might be spread over five years commencing in 1930-31, the year after reclamation operations would be complete. We propose that 5 lakhs should be spent in each of first three years, 7 lakhs in the fourth, and the remaining 4·5 lakhs in the fifth. The present value of this expenditure would be 19·54 lakhs. Adding this to Rs. 28·96 lakhs, the cost of reclamation, we obtain Rs. 48·50 lakhs as the present value cost of reclamation and development of this area.

29. **Realisations from Sales in Block 7.**—When we come to consider the probable realisations from this area we find that the net building area would be about 3·40 lakhs square yards out of a gross area of 6·54 lakhs square yards. This land is at a considerable distance from the heart of the city and we do not think it is ever likely to become a popular residential area for the wealthier classes of the population. There is already, or will be in the immediate future a very large area of vacant land, suitable and available for residential purposes, which will compete directly with this land. The Port Trust have for disposal in this area some 45,000 square yards set free by the removal of the Cotton Green to Sewree, the B. B. & C. I. Railway will have over one lakh of square yards for disposal, the G. I. P. Railway have 35,500 square yards, and the Colaba Land and Mill Company have nearly one lakh of square yards of net building area available for sale in the immediate vicinity, and there are also considerable areas for disposal in the hands of the Military Department and private owners. Taking all the facts into consideration we are of opinion that we cannot reasonably expect a higher average price than Rs. 25 per square yard for the reclaimed land in this area, and that the period of disposal will be 20 years commencing from 1931-32, the year after development operations begin. This will give a total receipt for 3·40 lakhs square yards net building area of 85 lakhs, of which the present value is 36·97 lakhs.

30. It will be at once apparent that with a present value cost of Rs. 48·50 lakhs and a recoupment of Rs. 36·97, the reclamation and development of this area is not a paying proposition. We have therefore considered whether it would not be economical merely to reclaim the land and to leave it undeveloped until it might be required either for the expansion of the city or as a necessary open space for recreation. We have come to the conclusion that by the time this land might reasonably be expected to be required for these purposes, the interest charges plus the cost of reclamation by dredging would have amounted to a sum which would exceed the cost of dry filling at that date. It would be more economical not to fill the area now by dredging, but to proceed with the reclamation by dry filling as, and when it might be required.

31. **Recommendation regarding Block 7.**—We, therefore, recommend that the reclamation of Block 7 should not be proceeded with at present. The dredger "Sir George Lloyd" and other dredging plant not required for dredging in Back Bay should not be worked and such reductions in establishment and other economies as are rendered possible by this decision should be carried out as early as possible.

32. **Foreshore areas in Blocks 5, 6 and 7.**—While we are unable to recommend that the reclamation of Block 7 should be proceeded with, we wish

to invite the attention of Government to the possibility of extending the present line of Cuffe Parade by the reclamation of the foreshore areas in Blocks 5, 6 and 7. The sea here is very shallow and already much filling has been deposited by leakage from Block 8; it should therefore be possible to reclaim the land at a very low cost, and we think there might be a better market for this land than for most lands in the Colaba area. We have not the data on which to make a definite recommendation on this subject, but we are of opinion that it should be carefully investigated.

33. **Future of the Scheme.**—It is necessary to say a few words regarding our views of the Back Bay Reclamation Project as a whole. It will be clear from what we have already said that we do not think an early prosecution of the whole scheme is a practical financial proposition. We have been assured that the sea wall is practically a permanent structure and that the cost of keeping it in repair is negligible. We have considered the possibility of continuing the part of the wall at present constructed, of connecting the two ends by some kind of a bridge in order to make a continuous marine drive, and of turning the unreclaimed area within the sea wall into a sort of ornamental inland lake. We have before us no expert opinions on the technical feasibility of this project but it is certain that even this degree of development would cost a great deal of money, and we do not think that any opinion we might give on such a scheme would be of value in the absence of a definite proposal brought forward by responsible persons and backed by careful estimates of cost. It would be an amenity, but the people of Bombay can only have such amenities as they are prepared to pay for and for many years to come there will be little public money to spare for anything but necessities.

34. We think that Government should consider the question of extending the powers of the Advisory Committee to the Development Department in the direction of giving them executive functions somewhat similar to those exercised by such public bodies as the Bombay Port Trust and the Bombay Improvement Trust.

35. In conclusion, we desire to express our appreciation of the services of Mr. H. Dow, I.C.S., who was appointed by Government Resolution No. S. C. 1180 of 19th July 1926 to be Secretary to our Committee. Owing to the shortness of the time available for our deliberations, he has had to work at very high pressure, and his work in calculating a large number of statements and in drafting this report has been a great assistance to us, and calls for our highest appreciation.

(Signed) JOSEPH A. KAY
(Chairman).

(„) R. H. A. DELVES.

(„) R. P. PARANJPYE.

(„) G. B. PRADHAN.

(„) A. GEDDIS.

(„) R. M. CHINYOY.

(„) LALJI NARANJI (*subject to my
minute*).

H. DOW,
Secretary.
20th August 1926.

MINUTE BY MR. LALJI NARANJI

I am sorry I have to submit a separate Minute of dissent disagreeing from my colleagues, and I do not agree with the very comprehensive report prepared by them.

I, however, agree with my colleagues that blocks 8 and 1 should be completed. I believe that with an additional expenditure of 13 lacs of rupees Government will get from the Military Rs. 279.08 lacs on completion of Block No. 8. I must mention here that the basis for this 13 lacs of rupees new expenditure has been got from the report of the Neilson Committee and I am mentioning this figure for what it is worth.

My reason for agreeing to the completion of Block No. 1 is because the work has already been continued on it inspite of protests from public and large sums of money have already been spent. A portion has already been filled up and in my opinion it will be unwise to leave it uncompleted at this stage as it will be a danger to the health of the City. An additional expenditure of 19 lacs by Government on this Block will yield about 125,000 square yards of building area and about 150,000 square yards for recreation ground. Another additional reason for my agreeing to complete this block is that it will ultimately reduce our present losses. I must, however, emphasize that my agreement to complete this block is distinctly on the understanding that the figures of cost as placed before us will not be exceeded. I would also point out that I have grave doubts about the land fetching as much as 70 rupees per yard on an average as my colleagues seem to think if the other blocks are proceeded with. My colleagues however do not seem to attach sufficient importance to the enormous area of land already available in the same neighbourhood. I am afraid that they also appear to have overlooked the fact that the great demand for land in 1920 and 1921 was due to the fictitious war prosperity of those years when there was a big boom in the business. The disposal of the whole area will take a very long time and the average price may not even come to half the figure assumed by my colleagues. The longer the period the larger is the accumulation of interest and other charges and all these factors are bound to upset any calculation of extra savings to be made from the completion of these blocks. I shall be quite happy if we could cover only the additional expenditure now to be incurred plus the interest and charges to the date of the final disposal of the land in question.

Block No. 2 is to be commenced if certain conditions are fulfilled. There is no data before this Committee available from the Neilson Committee to whom this Committee was referred to check the costs of departmental estimates and as this has not been done, I will not hazard any opinion on Block No. 2.

I agree with my colleagues that Block No. 7 should be abandoned. I however think that the estimate of Rs. 25 per yard is wrong. It will never fetch more than Rs. 15.

I would also like to point out that the method of looking at losses of this kind from the present value figures is entirely misleading. The losses will be the net outlay by the Government in the shape of capital, costs, interest and charges as they stand after crediting all realizations on particular dates in future, but not earlier than two years. I am afraid the losses will be much higher than my colleagues would like to make out on the basis of so-called present values and I would like the public to clearly understand that the ultimate cost of the tax-payers of this Presidency is going to be much larger than my colleagues would make it out. The figures of present value are entirely misleading. I believe that the correct calculation of such cost would depend upon a correct estimate of the period that is required before all the land is finally disposed of and it is very difficult to fix any period for the sale of the land which entirely depends on the improvement of trade and industry which is very uncertain now.

I am of opinion that the dredger "Sir George Lloyd" should be disposed of at once thereby saving further costs. Besides there is no work for this dredger.

I further say that the Department should only complete Blocks Nos. 8 and 1 which have been partly prepared by them.

The Development Department is no longer necessary now, should therefore be immediately abolished and such work as remains to be done be transferred to the Public Works Department.

I believe that the further prosecution of the whole scheme at any date is fraught with many dangers and is not financially sound.

(Signed) LALJI NARANJI.

Bombay, 20th August 1926.

APPENDIX 1

STATEMENT SHOWING FINANCIAL EFFECT OF RECLAMATION OF BLOCK 8 ONLY

Expenditure on all Back Bay Reclamation Works including interest up to 1st July 1926 is Rs. 590·91 lakhs

(All figures in lakhs)

Year	Debt out- standing	Expenditure during year	Interest at 6 per cent.	Total Capital Expenditure (cols. 1, 2 & 3)	Receipts	Debt at the end of year	Remarks
1st July 1926 to 31st March 1927.	590·91	6·53	26·74	624·18	<i>Nil</i>	624·18	Interest for 9 months only.
1927-28	624·18	7·01	37·66	668·85	<i>Nil</i>	668·85	
1928-29	668·85	<i>Nil</i>	40·13	708·98	239·09	469·89	Payment of 239·09 lakhs by Government of India assumed on last day of financial year.

Interest is calculated on the opening debt *plus* half the expenditure of the year.

The value on 1st July 1926 of Rs. 469·89 lakhs on 1st April 1929 is Rs. 400·31 lakhs.

Therefore, the completion of Block 8 will result in a reduction of debt of 190·60 lakhs on 1st July 1926.

This Statement does not take any credit for disposal value of any plant.

APPENDIX 2

COST OF RECLAMATION OF BLOCKS 8 AND 1 ONLY

(All figures in lakhs)

Year	Debt out-standing	Expenditure during year	Interest at 6 per cent.	Total Capital Expenditure (cols. 1, 2 & 3)	Receipts	Debt at the end of year	Remarks
1st July 1926 to 31st March 1927	590·91.	15·03	26·93	632·87	....	632·87	Interest for 9 months only.
1927-28	632·87	14·95	38·42	686·24	....	686·24	
1928-29	686·24	2·36	41·25	729·85	239·09	490·76	

Present value on 1st July 1928 of Rs. 490·76 lakhs on 1st April 1929 is Rs. 418·10 lakhs.

Therefore, by completing these two Blocks, there is a reduction of loss of Rs. 172·81 lakhs at present value even if no land in Block 1 is sold.

Reduction of loss by completing Block 8 only, at present value, was Rs. 190·60 lakhs.

Therefore, extra cost of completing Block 1, undeveloped, is Rs. 17·79 lakhs, present value.

No credit taken for disposal value of plant.

APPENDIX 3

COST OF RECLAMATION OF BLOCKS 8, 1 AND 2 ONLY

(All figures in lakhs)

Year	Debt out-standing	Expenditure during year	Interest at 6 per cent	Total Capital Expenditure (cols. 1, 2 & 3)	Receipts	Debt at the end of year	Remarks
1st July 1926 to 31st March 1927	590.91	16.27	26.96	634.14	....	634.14	Interest for 9 months only.
1927-28	634.14	16.34	38.54	689.02	....	689.02	
1928-29	689.02	15.75	41.81	746.58	239.09	507.49	
1929-30	507.49	13.39	30.85	551.73	....	551.73	
1930-31	551.73	5.71	33.28	590.72	....	590.72	

Present value on 1st July 1926 of Rs. 590.72 lakhs on 1st April 1931 is Rs. 447.90 lakhs.

Therefore, by completing these three Blocks there is a reduction of loss of Rs. 143.01 lakhs at present value even if no land in Blocks 1 and 2 is sold.

Reduction of loss by completing Blocks 8 and 1 only was found to be Rs. 172.81 lakhs at present value.

Therefore, extra cost of completing Block 2, undeveloped, is Rs. 29.80 lakhs at present value.

APPENDIX 4

COST OF RECLAMATION OF BLOCKS 8, 1, 2 AND 7

(All figures in lakhs)

Year	Debt out-standing	Expenditure during year	Interest at 6 per cent.	Total Capital Expenditure (cols. 1, 2 & 3)	Receipts	Debt at the end of year	Remarks
1st July 1926 to 31st March 1927	590·91	31·48	27·30	649·69	....	649·69	Interest for 9 months.
1927-28	649·69	23·87	39·70	713·26	....	713·26	
1928-29	713·26	15·75	43·27	772·28	239·09	533·19	
1929-30	533·19	21·93	32·65	587·77	....	587·77	
1930-31	587·77	5·71	35·44	628·92	....	628·92	

Present value on 1st July 1926 of Rs. 628·92 lakhs on 1st April 1931 is Rs. 476·86 lakhs.

Therefore, by completing these four Blocks, there is a reduction of loss of Rs. 114·05 lakhs at present value even if no land in Blocks 1 and 2 is sold.

Reduction of loss by completing Blocks 8, 1 and 2 only was found to be Rs. 143·01 lakhs at present value.

Therefore, extra cost of completing Block 7, undeveloped, is Rs. 28·96 lakhs at present value.

APPENDIX 5

Copy.

No. E.D./43/A of 1926-1927

Bombay Municipality,
Bombay, 2nd August 1926.

From

H. K. Kirpalani, Esq., I.C.S.,
Municipal Commissioner for the City of Bombay;

To

The Secretary,
Back Bay Committee.

Sir,

With reference to your letter No. F.A. Dev.-56, dated 27th July 1926, asking for certain information required by your Committee, I have the honour to state as follows :—

It was originally intended to take the sewage from Block No. I northwards to Love Grove by means of the ovoid sewer from Marine Lines and Block No. II was intended to be drained along with the other blocks of the reclamation into the Colaba outfall. But as the construction of this outfall with all subsidiary work is not to be completed for some years, the sewage of the Blocks Nos. I and II, if they are to be completely reclaimed within the near future, will have to be taken for the time being northwards and discharged into the Queen's Road ovoid sewer.

For further particulars regarding this point I would refer you to my letter No. E.D-43-A, dated 15th February 1926, to the Deputy Director, Development (copy sent for ready reference).

It is not proposed to carry the sewage of any other blocks which may be completed hereafter into the Queen's Road sewer as it would not be capable of dealing with it. The construction of the outfall at Colaba was primarily intended to deal with the reclamation and it is impossible to say when the work on this outfall will be commenced until we are in a position to know whether the reclamation is to be completed in its entirety.

* * * * *

I have, etc.,
(Signed) H. K. KIRPALANI,
Municipal Commissioner.

Letter No. E.D./43/A, dated 15th February 1926, from the Municipal Commissioner, to the Deputy Director of Development.

Regarding disposal of sewage in Blocks Nos. 1 and 2 in the Back Bay Reclamation

I have the honour to refer to your letter No. 76-(D.B.), dated 11th January 1926, on the above subject, and to state that the nearest sewer for connecting up blocks Nos. 1 and 2 would be the 15" pipe sewer which runs from Mayo Road along Church Gate Street and finally along the New Marine Lines, discharging into the head of the Queen's Road ovoid sewer (3' 9" x 2' 6") opposite the Marine Lines Railway Station; the invert of the latter sewer is 80.34 T.H.D. and of the former at its junction with Church Gate Street, 86.87 T.H.D. The aforesaid 15" sewer has however been laid with an extremely flat gradient and is joint bottom to bottom with the Queen's Road ovoid sewer, and it also receives at present nearly half of the sewage of the Colaba District. It is therefore not in a fit condition to receive any further sewage.

Blocks Nos. 1 and 2 could however temporarily be drained by installing a self-contained electrically worked automatic ejector near Church Gate Station to which the sewage therefrom could be converged and discharged through a small C. I. pressure main into the head of the Queen's Road sewer opposite Marine Lines Station.

In the event of the proposed new outfall at Colaba being subsequently extended to Church Gate Station, the sewage from this Ejector Station could be diverted to the Colaba outfall.

I forward herewith a plan marked D.D., dated 25th January 1926, showing the existing Municipal sewers with their sizes and gradients in Mayo Road, Church Gate Street, New Marine Lines and Queen's Road.

Any sewers for these reclaimed areas will, it is understood, be constructed at the expense of the Development Department.

APPENDIX 6

Terms of reference of this Committee

GOVERNMENT OF BOMBAY

DEVELOPMENT DEPARTMENT

Resolution No. S.B.—949

Bombay Castle, 14th June 1926

RESOLUTION OF GOVERNMENT

The Governor in Council is pleased to appoint a committee consisting of the following members to report to Government on the policy to be adopted in connection with the further execution of the Back Bay Reclamation Scheme :—

Chairman

J. A. Kay, Esquire, M.L.C., Chairman, Chamber of Commerce, Bombay.

Members

Lalji Naranji, Esquire, M.L.C., Chairman, Indian Merchants' Chamber, Bombay.

A. Geddis, Esquire, Chairman, Millowners' Association, Bombay.

Rahimtoola M. Chinoy, Esquire, President, Municipal Corporation, Bombay.

Dr. R. P. Paranjpye, D.Sc., M.L.C.

G. B. Pradhan, Esquire, B.A., LL.B., M.L.C.

R. H. A. Delves, Esquire, F.S.I. (subject to the approval of the Board of Trustees for the Improvement of the City of Bombay).

2. The terms of reference should be as follows :—

“Having regard to the present financial position of the scheme, to consider and report to Government, as to what, if any, further portion of the scheme can be undertaken with reasonable prospect of reducing the present loss, and specially with reference to blocks 1 and 2.”

3. Under Government Resolution No. S.B.—654, dated 19th April 1926, a committee of engineers has been appointed to check and revise the estimates on which the tables in the second *ad interim* report of the Special Advisory Committee on the scheme have been based. Any estimate of the expenditure necessary for the execution of the whole or of any part of the scheme, which the committee now being constituted may require, will be prepared for them by the Development Department on the basis of figures approved by the committee of engineers.

4. Whenever their presence at meetings of the committee will be useful, the Director of Development and the Secretary to Government, Development Department, should attend to give such advice and information as may be necessary. The committee should further be empowered to call for the attendance, at any meeting of the committee, of any officer at present engaged on the project, and for any facts and figures that may be required in connection with their investigation.

5. The report of the committee will be forwarded to the Government of India, who have decided to place it before the committee of enquiry into the scheme which they have on the 19th of May 1926, announced their decision to appoint.

By order of the Governor in Council,

H. ST. C. SMITH,

Deputy Secretary to Government.

APPENDIX 7

Bombay Scheme No. 1—Back Bay Reclamation
Appointment of a committee of engineers
in connection with the—.

GOVERNMENT OF BOMBAY

DEVELOPMENT DEPARTMENT

Resolution no. S.B. 654

Bombay Castle, 19th April 1926

RESOLUTION OF GOVERNMENT

The Governor in Council is pleased to appoint a small committee of engineers to check and revise the estimates on which the tables in the second *ad interim* report of the Special Advisory Committee on the Back Bay Reclamation Scheme have been based. The revised estimates will be prepared in the first instance by the Chief Engineer, Reclamation Branch, as soon as possible after the close of the current working season.

2. The committee will consist of the following members:—

Chairman

- (1) Mr. W. H. Neilson, O.B.E., V.D., M.A., M.A.I., M.Inst.C.E., M.I.Mech.E., Chairman, Bombay Port Trust.

Members

- (2) Mr. V. N. Vartak, M.A., L.C.E., Superintending Engineer, Public Works Department (on leave).
(3) Mr. C. W. E. Arbuthnot, B.E., B.A. (R.U.I.), Executive Engineer, Presidency Division.
(4) Mr. Jamshedji P. Mistri, B.A., L.C.E., of Messrs. Mistri & Bhedwar.

3. The committee is empowered to call for information from the officers of Government and should be asked to submit their report as soon as possible after receipt from the Chief Engineer, Reclamation Branch, of the results for the current working season.

By order of the Governor in Council,

H. ST. C. SMITH,

Deputy Secretary to Government.

Bombay Scheme No. 1—Back Bay Reclamation
Appointment of a committee of engineers
in connection with the—.

GOVERNMENT OF BOMBAY

DEVELOPMENT DEPARTMENT

Resolution no. S. B. 1150

Bombay Castle, 15th July 1926

Read again Government Resolution no. S. B. 654, dated the 19th April 1926.

RESOLUTION.—The Governor in Council is pleased to direct that the following should be added to paragraph 1 of Government Resolution no. S. B. 654, dated the 19th April 1926:—

“ Pending the revision of these estimates, the committee should be requested to check the estimates prepared by the Chief Engineer, Reclamation Branch, for the completion of blocks 1 and 7 after the 1st October 1926, as a decision has to be arrived at immediately whether dredging should be continued next season. The committee should also be requested to examine any figures, of which their approval may be required under paragraph 3 of Government Resolution no. S. B. 949, dated the 14th June 1926.”

By order of the Governor in Council,

H. ST. C. SMITH,

Deputy Secretary to Government.

APPENDIX 8

REPORT OF THE COMMITTEE OF ENGINEERS UNDER MR. W. H. NEILSON AS CHAIRMAN

Harbour Dredging

The main point to be considered is the cost of the dredged filling already done and the probable cost of this filling for future working. The most accurate way to arrive at this figure is to take the quantity of consolidated filling from sections and find the cost per yard of this deposited at site. There are however difficulties in doing this, in this particular case, because during the first two seasons-working, the area pumped into was not sealed, and for the third season, just completed, a large quantity of the material at site is composed of silt still in suspension.

The cost per cubic yard for the first two seasons is therefore to some extent illusive and for the third season an allowance, which is not easy to fix, has to be made for shrinkage and settlement.

The method of deducing the cost from the sections taken in the Harbour can only be looked upon as a check of limited value; the whole of the material disturbed is not necessarily pumped ashore, and the action of the tides may have some effect on the dredged area. There is also a certain amount of leakage through the floating pipe joints to be taken into account. This total wastage was as much as 34½ per cent., in soft material, when the work of the Mazagon-Sewri Reclamation was carried out. At Karachi, where the material was mostly heavy sand, the wastage was in the neighbourhood of 15 per cent.

The output per pumping hour of the dredger in 1923-24 was the highest reached so far, but the number of hours worked the smallest. The average for the three working seasons was 1,407 hours of actual pumping and, allowing for the exceptional period of 1923-24, it would be safe to assume that 1,600 hours per season can be done. The average number of cubic yards pumped per hour for the last three seasons is 945. Working under the same conditions and in the same material this average should be capable of being maintained.

The number of cubic yards to be dredged per season should be therefore $1,600 \times 945 = 15,12,000$ or allowing say 20 per cent. wastage 12,00,000 cubic yards. The quantity of dredged filling required in Block 7 is 24,00,000 cubic yards or just two seasons work.

The cost, taking the Harbour sections, was Rs. $\frac{20,88,504}{39,50,147} = 8.46$ annas per cubic yard; allowing 20 per cent. wastage the cost would be 10.57 annas. This is the check figure.

The cost, taking the sections over the actual filled area completed during the season 1925-26, can now be considered. The areas filled during the seasons 1923-24 and 1924-25 can be left out of account as the loss of material was evidently high. The sections (for 1925-26) give a figure of 22,64,000 cubic yards of material deposited (omitting, of course, the moorum filling) and the cost was Rs. 10,02,563, according to the revised figures sent to the Committee under cover of letter No. D. B. 145 of 19th July from the Director of Development. Shrinkage must now be allowed on this area.

From observation and experiment, this shrinkage will be heavy, and after careful consideration, the Committee consider it prudent to fix the percentage for shrinkage at 40 per cent. This gives a consolidated filling equal to 13,50,000 cubic yards at a cost of 11.88 annas per cubic yard or Rs. 2.75 per brass and this rate has been adopted for the estimate of Block No. 7. This figure will, of course, only hold good if the area is properly sealed.

The quantity still required to complete Block No. 8 will be altered from the estimate of 2,63,394 given by the Bombay Development Department as follows:—

			Cubic yards
By dredging seasons 1923-25	..	..	12,00,000
Season 1925-26 measured <i>in situ</i>	..	22½ lakhs cubic yards	
Less 40 per cent. shrinkage		9 " "	13,50,000
		Consolidated filling	25,50,000
Dry filling deposited up to 31st May 1926..		413,756 cubic yards	
Less 15 per cent. shrinkage	..	62,063 " "	3,51,693
			29,01,693
		Total required for Block No. 8 ..	39,09,544

	Cubic yards.
Balance required after 31st May 1926	10,07,851
Less moorum topping 12" thick	3,70,464
	<u>6,37,387</u>
Deduct moorum to be deposited up to 15th October 1926 ..	1,61,500
	<u>4,75,887</u> cubic yards required to complete Block No. 8.

The cost of moorum filling has been taken by the Bombay Development Department at Rs. 4.92 per brass, and this figure can be adhered to, except that 15 per cent. should be allowed for shrinkage, bringing the cost up to Rs. 5.79 per brass, i.e., Rs. 1.56 per cubic yard. The rates for developing Plot No. 7 by means of roads, lighting, drains, etc., have not been altered, as no specification has yet been laid down, but the rates are sufficient to cover the highest specifications.

The quantities for filling Block No. 7 have been checked.

The estimated expenditure to complete Block No. 7 will therefore be:—

	Rs.
Moorum filling 97,800 brass at Rs. 5.79	5,66,262
Dredged filling 652,400 (consolidated) at Rs. 2.75	17,94,100
Roads, drains, sewers and lighting	<u>26,43,276</u>
	50,03,638
Establishment charges 13½ per cent.	6,75,362
	<u>56,79,000</u>

[Establishment charges have been estimated by the Committee at 13½ per cent. because the capital programme for next year is about Rs. 30 lakhs (28 lakhs for works and 2 lakhs for superior dredging establishment) and the provision for superior Engineering Establishment is Rs. 3 lakhs and for audit and overhead Rs. 1 lakh, making Rs. 4 lakhs or 13.3 per cent. For year ending March 1925, these charges worked out at 12.38 per cent.]

Back Bay Dredging

The quantity dredged from sections taken in the Back Bay to the end of season 1925-26 was 3,88,640 cubic yards and the cost incurred was Rs. 8,06,322 (the "Jinga" was not at work). So the cost per yard (dredging) was Rs. 2.1, which was distinctly high. This was due to the poor results of the first and the first half of the second working season when the dredger was searching about for a suitable place to dredge.

The output for the season 1925-26 was 3,72,925 yards and the cost was Rs. 4,47,650 (as per letter No. D. B. 145 of 19th July from the Director of Development) or Re. 1.3-3 per cubic yard, i.e., Re. 1-8-0 with 20 per cent. wastage. This did not include the cost of the "Jinga" which was not working.

The data available for estimating costs is scanty. It has been ascertained that Development Directorate estimates have been based on the assumption that the dredged hole will fill up again during the monsoon, as did the hole dredged in 1924-25. The hole made last season is, however, of a much greater extent, and, although it may probably fill up, it remains still to be proved that it will fill up before dredging starts next season. The position of the dredger is more exposed than in the Harbour and the difficulties due to shallow water are increased. The material is stiffer and although the loose sand, which it is assumed will gradually occupy the dredged area, is easier for the cutter to work in, it is appreciably heavier than the silt and moorum dredged in the Harbour. Consequently the amount of water to be pumped with it will be greater.

Assuming, however, that there will be a 50 per cent. increase in output when dredging over the area worked on last season, the output would be 22,000 plus 11,000 = 33,000 cubic yards per week. So it would take say 11½ weeks to complete this area. Thereafter the rate would be 22,000 cubic yards per week for the remaining period of 12½ weeks or say 2,75,000 cubic yards making (3,72,925 plus 2,75,000) 6,48,000 cubic yards for the season 1926-27 or 1,75,000 brass.

From sections taken over the filled area in Block No. 1, the quantity of dredged filling done amounts to 6½ lakhs cubic yards. Out of this quantity, 15,640 cubic yards can be taken as consolidated, due to the work done in 1924-25. The remaining quantity, 6,34,360 was done

last season and is still unconsolidated over a large area. The shrinkage can be taken at 30 per cent. as the material is heavier and settles more quickly round the outlet of the pipes than does the material from the Harbour. This would give an equivalent of $4\frac{1}{2}$ lakhs cubic yards, which cost Rs. 4,47,650 to deposit or say Re. 1 per yard, i.e., Rs. 3-11-0 per brass.

The quantity to be done next year will be about $6\frac{1}{2}$ lakhs cubic yards or $4\frac{1}{2}$ lakhs consolidated, the cost should be (Rs. 4,50,000 plus Rs. 1,50,000 for the "Jinga") Rs. 6,00,000 or say Re. 1-5-0 per cubic yard or Rs. 4-14-0 per brass.

The total quantity required to complete Block I (undeveloped) is about 3,25,000 brass. Out of this about 70,000 brass will be done by lorries and about 40,000 brass with moorum topping.

The cost will therefore approximate :—

	Rs.
Dredged filling consolidated 2,15,000 brass at Rs. 4-14-0	10,48,125
By lorries 70,000 brass at Rs. 2-8-0	1,75,000
Moorum 40,000 brass at Rs. 5-7-9	2,31,600
	<hr/>
	14,54,725
Add $13\frac{1}{2}$ per cent. for establishment and overhead	1,96,275
	<hr/>
	16,51,000

Dated 30th July 1926.

W. H. NEILSON, Chairman.

V. N. VARTAK,	}	Members of the Committee.
C. W. E. ARBUTHNOT,		
JAMSHEDJI P. MISTRY.		