Public Works (1896) Department.

G.O., No. 392

Dated 5-5-96

[Despatch Abstract.]

Vary Nullah: Estimate of Rs 9,340 for making the — navigable and providing a boat basin thereon, Buckingham Canal, Sanctioned.

BACK PAPERS.

G.O.	No.	Department.	Date.	G.O.	No.	Department.	Date.

FURTHER PAPERS.

G.O.	No.	Department.	Date.	G.O.	No.	Department.	Date.

No. 392 I., 5TH MAY 1896.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

READ—the following papers:—

From Messrs. BINNY AND CO., to the Chief Engineer for Irrigation, dated Madras, 23rd June 1894.

We have the honour to enquire whether there is any prospect of the Buckingham Canal being made navigable and connected with the Otary nullah as far as the Buckingham and Carnatic Mills.

There is a heavy traffic in firewood to these mills which consume about 5,000 tons of green wood per mensem, a great deal of which comes by canal and the convenience of delivery of which would be greatly facilitated by the extension of the canal.

If the scheme, which we understand is under consideration of connecting the canal with the harbour is completed, there would be a constant traffic to and from the harbour of import and export goods to and from these mills.

To Messrs. Binny & Co., dated 28th June 1894, No. 341 M.
From " 27th August 1894.
To the Superintending Engineer, II Circle, dated 4th September 1894, No. 35 B.C.
From " " " " 13th February 1895, No. 379 B.C.
To Messrs. Binny & Co., dated 19th February 1895, No. 82 M.

From A. S. RUSSELL, Esq., Executive Engineer, Buckingham Canal Division, to the Superintending Engineer, II Circle, dated 20th February 1895, No. 2826.

In continuation of this office No. 2511, dated 24th ultimo, I have the honour to report as follows on the proposal made by Messrs. Binny and Co. to make the Otary nullah navigable.

2. The approximate minimum cost of doing so, as recommended by me in my letter to Messrs. Binny and Co., and as accepted by them in their reply, is Rs. 7,000. The Municipality, the Madras Railway, and the Military Department have all been communicated with regarding the necessary alterations to bridges, and have acquiesced in the proposals made by me. There is thus no difficulty in making the Otary nullah navigable.

3. I think there can be little doubt that by making the nullah navigable, and thus giving the Buckingham and Carnatic Mills and other industries facilities for obtaining both coal and firewood very cheaply, a great impetus will be given to the demand for carriage of coal and firewood by canal. Messrs. Binny and Co. inform me that their mills alone will take 5,000 tons of firewood per month, or 60,000 tons per year. The total tonnage of firewood now carried by canal is only 80,000 tons, and this figure at present represents the total consumption of firewood from all sources put together.

4. By making the Otary nullah navigable, a considerable extent of low waste swampy ground will be brought into connection with canal, and will afford means of making a large boat basin at a small cost. Extra space for boats at the Madras wharf is already very much required, and *must* be provided for some day, the whole width of the canal at the wharf being now at times crowded with boats to the great inconvenience of passing traffic, when the railway line crosses the wharf, the available space for boats will be more cramped than ever, and I do not know where extra space can be conveniently obtained except at a boat basin leading from the Otary nullah to enable boats to pass to this boat basin, more head-way must be given to two bridges than was proposed by me in my letter to Messrs. Binny and Co. but the total cost of the combined project will not exceed Rs. 10,000.

5. I think the combined scheme for making the Otary nullah navigable, and for providing further boat accommodation will well repay its cost, and I recommend it for sanction.

6. Detailed estimates will be prepared and forwarded, if preliminary approval to the working out the project is given.

No. 399 B.C.

Submitted to the Chief Engineer for Irrigation, in continuation of this office No. 379 B.C., dated 13th February 1895. The undersigned strongly recommends the combined scheme.

(Signed) W. L. C. BADDELEY, Major, R.E.,
Suptg. Engr., II Circle.

1st March 1895.

Memo. No. II/15 B.C.

With reference to endorsement No. 399 B.C., dated 1st instant, of the Superintending Engineer, II Circle, the undersigned has the honour to inform him that the combined scheme for making the Otary nullah navigable and for providing further boat accommodation is approved and to request that the preparation of the detailed estimates for the work may be put in hand for early submission.

(Signed) R. R. E. DRAKE-BROCKMAN, Col., R.E.,
Chief Engineer for Irrigation.

6th March 1895.

From A. S. RUSSELL, Esq., Officiating Superintending Engineer, II Circle, to the Chief Engineer for Irrigation, dated 6th December 1895, No. 102 C.

With reference to your endorsement No. II/15 B.C., dated 16th March 1895, I have the honour to forward an estimate, amounting to Rs. 9,450, for making the Otary nullah at Madras navigable and for providing a boat basin therein. The report accompanying explains the object and necessity for the works proposed.

2. The working out of this little scheme, as in the case of most projects in Madras town, has involved numerous references, and has occupied much time, and the scheme, as now sent up, provides for the various interests involved.

3. Financially there is no doubt that the making of nullah navigable will well repay the cost, while the provision of extra boat accommodation is essential in order to relieve the congested state of traffic which so often now occurs at the Madras Wharf, and which will be intensified by the additional traffic that will spring up when the harbour canal is opened.

4. The cost of raising the railway bridge 1½ feet (being as much as Rs. 5,000) has been left to Messrs. Binny and Co. to bear, should they ultimately decide, as they probably will do, to pay for the work. So far as Government interests are concerned, the work is not essential, but the estimate provides for raising the other bridges to the same height, viz., 7·75 feet above M.S.L., the extra cost involved by so doing being small.

5. The nullah will be tidal when the harbour is in operation, and coal, firewood and cargo boats will be able daily to navigate it, at favourable stages of the tide, even with a head-way of only 6¼ feet above M.S.L. The inadequate head-way of the existing bridges, and the weakness of their foundations, has been a great stumbling block in preparing a satisfactory scheme, and the estimate, as drawn up, provides, at a moderate outlay, for the best possible arrangements of head-way at bridges and depth in nullah.

6. Provision is made in the programme of expenditure of the Buckingham Canal for 1896–97, for execution of the work, and the early sanction of the estimate is recommended for the approval of Government.

ENCLOSURE.

REPORT to accompany the estimate for making the Otary nullah at Madras navigable and for providing a large boat basin for providing for traffic at the Madras Wharf.

	RS.
Estimate	9,450

Otary nullah.—The nullah enters the Madras district in Kilpauk, and running in an easterly and northerly direction, falls into the Buckingham Canal at the Madras Basin, passing in its course the Carnatic Mills. The proposal to make the Otary nullah navigable originally emanated from Messrs. Binny and Co., so as to facilitate transport of coal, firewood, stores, &c., to these mills. Messrs. Binny and Co. estimate that about 36,000 tons of materials per annum will be used by the mills alone. A further increase of traffic should also develop if the nullah is made navigable, and a great impetus will be given to the fuel and coal traffic by canal.

Financially the scheme will be profitable to the canal revenues.

Water available for traffic.—The available head-way is limited by the height of the Madras Railway bridge near basin. This height is only 6·25 feet above M.S.L. and the cost of raising the girders 1½ feet is Rs. 5,000. As Messrs. Binny and Co. think that they may themselves pay for this work, the other bridges will be raised by Government so as to give the same head-way, 7·75 feet above M.S.L., the extra cost being insignificant. The estimate makes provision accordingly. When the harbour canal is completed, the Otary nullah will be tidal, and a surface level of M.S.L. or below will probably be reached daily, allowing boats with head-way not exceeding 7¾ feet to navigate the nullah. The bed of nullah will be deepened to 3 feet below M.S.L. with bottom width 20 feet and side slopes 4 to 1. The nullah, as it exists, is wide and well defined, and only needs deepening to the level proposed. Further deepening would interfere with the foundations of bridges, and is inadvisable. These conditions, which will limit the use of the Otary nullah to boats of head-way not exceeding 7¾ feet and with a draught not exceeding 2½ feet, have been explained to Messrs. Binny and Co., who have accepted them. The length of nullah proposed to be utilized is about 5,988 feet, *i.e.*, from the Madras Basin to the cause-way near the mills.

Works estimated for three-arch bridge near the Buckingham Canal office.—This bridge at present is very low. It is proposed to utilize the centre archway for the passage of boats. To secure the necessary height of 7·75 feet above M.S.L., the adjacent piers will be raised and the centre span crossed by wrought iron girder bridge of rolled beams carrying corrugated iron flooring.

	RS.
Amount of estimate	1,180

Powder Magazine bridge.—The nullah is crossed at the Powder Mills by a narrow wooden bridge. To make it available for traffic, it is proposed to lower the floor to 3 feet below M.S.L., to dismantle the centre pier, and to replace the existing timber work by new beams long enough to suit the increased span.

	RS.
Estimate	530

Deepening bed of nullah.—To deepen the nullah to 3 feet below M.S.L., allowing a bed width of 20 feet, and side slopes 4 to 1 entails a cost of Rs. 2,990. The total cost of improving the nullah for traffic stands thus :—

	Rs.
1. Alterations to three arch bridge	1,180
2. Do. to Magazine bridge	530
3. Deepening bed of nullah	2,990
4. Demarcating canal land	40
Total ...	4,740

Proposed large boat basin west of railway bridge.—By making the Otary nullah navigable, a large extent of low and waste ground will be brought into connection with the canal, thus affording the means of making a large boat siding or basin at a small cost. Extra accommodation for boats is much needed, the space* available at the Madras Wharf being already very limited to cope with the increasing traffic. The boat basin here proposed will afford a lay by 700 feet in length for boats not exceeding the limits of head-way and draught already mentioned. The basin will be 90 feet wide from centre of canal passage and will have water slopes 3 to 1 protected with turf sods. The platform will be raised 7 feet above M.S.L. and will be metalled for a width of 15 feet.

* This space, inadequate as it already is, will be further curtailed when the railway crosses the basin.

5th Dec. 1895. (Signed) A. S. RUSSELL.

	Rs.
Amount of estimate	2,760

Proposed road-way from boat siding to Madras Basin Bridge road.—To facilitate traffic from this siding it is proposed to form a road-way 1,390 feet long, connecting boat siding with the Main Basin Bridge road. Such a road will be very useful. The metalled width will be 15 feet. A culvert 3′ × 3′ vent will be required at the southern end to pass the local drainage which will be impounded on the eastern side of the roadway.

	Rs.
Amount of estimate	1,560

It is intended to make a short diversion of the Otary nullah into the Buckingham Canal to facilitate its being bridged. This work will be carried out by and at the cost of the Madras or East Coast Railway and will not affect this estimate. A tracing accompanies the estimate showing the proposed diversion and railway lines.

Total cost.—The total cost of the combined scheme will be as under:—

	Rs.
1. Making Otary nullah navigable	4,740
2. Providing boat siding and road-way	4,710
Total ...	9,450

(Signed) T. W. S. SMYTH,
Ex. Engr., Cooum Improvement Scheme.

No. 32 M.

In forwarding herewith plans, estimates and report for making the Otary nullah navigable and providing a boat basin therein for any remarks you may have to offer and return, I have the honour to inform you that the nullah will form a part of the Madras Wharf and that wharfage fees will be levied on all boats loading and unloading at the nullah in addition to license fees and irrespective of your undertaking the work of raising the railway bridge.

(Signed) R. R. E. DRAKE-BROCKMAN, Col., R.E.,
29th Jan. 1896. Chief Engineer for Irrigation.

From Messrs. BINNY AND CO., to the Chief Engineer for Irrigation, dated Madras, 5th February 1896.

We have the honour to acknowledge receipt of your letter No. 32 M. of the 29th ultimo, and to thank you for the enclosures which you sent us and which we now return herewith.

We have no remarks to offer and, so far as we can judge, the proposed work will answer our requirements very satisfactorily.

From the Chief Engineer for Irrigation, to the Consulting Engineer for Railways, dated 29th January 1896, No. 31 M.

It is proposed to make the Otary nullah, which falls into the Buckingham canal at the Madras basin, navigable at the request of Messrs. Binny & Co. to facilitate transport of coal, firewood, stores, &c., to the Carnatic Mills. It is found necessary to raise the girders of the Madras Railway bridge near the basin 1½ feet, and Messrs. Binny & Co. think that they may themselves pay for this work which is estimated to cost Rs. 5,000. I have the honour to request that you will be so good as to inform me whether the Madras Railway Company would have any objection to the proposed raising of the bridge.

From the Agent and Manager, Madras Railway, to the Consulting Engineer for Railways, dated 17th February 1896, No. 8904/132.

With reference to your endorsement No. 358 of the 4th instant, on copy of a communication from the Chief Engineer for Irrigation regarding the proposal to raise the girders of the Madras Railway bridge near the basin in order to make the Otary nullah navigable, I have the honour to forward herewith, for your information, copy of a letter addressed to me by our Chief Engineer on the subject.

Your attention is specially invited to paragraph 3 of the above letter.

ENCLOSURE.

From H. C. WEST, Esq., Chief Engineer, Madras Railway Company, to the Agent and Manager, Madras Railway Company, dated Madras, 14th February 1896, No. 7124/188.

Raising Bridge at 1/14 *mile.*

[Your endorsement, dated 6th instant, on Consulting Engineer's note No. 358 of 4th idem on copy of a communication from the Chief Engineer for Irrigation.]

There is no valid objection to the raising of the girders over the bridge in question so as to afford an increased head-way of 1½ feet. The work, however, will be troublesome to carry out as it involves working the train service on one track of the double line for some days during the progress of the work. The estimated cost of raising the girders and the line on each side is Rs. 5,000 which will have to be borne by Messrs. Binny & Co. It is however understood that Messrs. Binny & Co. are not prepared to incur this outlay until it has been ascertained that the present head-way will be insufficient after the conversion of the Otary nullah into a navigable channel.

2. Under these circumstances I would suggest that the proposal to raise the girders be deferred until after the Otary nullah has been deepened and made navigable and the present head-way tested with boats loaded with coal and other stores.

3. Messrs. Binny & Co. further point out that, if it be contemplated by Government to alter the other (road) bridges which span this nullah, it would be advantageous to have the full head-way available provided, so that, in the event of it being found ultimately necessary to raise the railway bridge, the outlay would be limited to this single structure and I shall feel obliged if the attention of the Consulting Engineer can be invited to this request.

No. 539.

Forwarded to the Chief Engineer for Irrigation.

The Consulting Engineer agrees with the views expressed by the Chief Engineer, Madras Railway.

(Signed) C. T. R. SCOVELL,
18th February 1896. *for* Consulting Engineer for Railways.

No. 17 B.C.

Forwarded to the Superintending Engineer, II Circle, for remarks. It will be seen that Messrs. Binny & Co. propose to defer raising the railway bridge, but suggest that the other bridges should be raised to the full height originally proposed, viz., 7·75 feet + M.S.L. In the report attached to estimate it is stated that the extra cost necessary to raise these bridges to 7·75 feet + M.S.L. instead of to 6·25 feet + M.S.L. (the present height of railway bridge) is insignificant.

(Signed) R. R. E. DRAKE-BROCKMAN, Col., R.E.,
24th Feb. 1896. Chief Engineer for Irrigation.

From Major W. L. C. BADDELEY, R.E., Superintending Engineer, II Circle, to the Chief Engineer for Irrigation, dated 3rd March 1896, No. 451 B.C.

In reference to your No. II/17 B.C., dated 24th February 1896, I have the honour to report that I see no objection to deferring the raising of the railway bridge to 7·75 + M.S.L.

2. There is also no objection to the other bridges being altered so as to provide a head-way of 7·75 + M.S.L.

3. Messrs. Binny & Co. should, however, guarantee that they will use the canal, and, if considered necessary by this department, pay for the raising of the railway bridge to 7·75 + M.S.L.

No. 118 M.

With reference to correspondence ending with your letter of the 5th February 1896 regarding the Otary nullah scheme, and before submitting the estimate for the orders of Government, I have the honour to inquire if you will guarantee to meet the cost of raising the railway girder bridge near the basin—if considered necessary by this department—to make use of the canal when made navigable and, as mentioned in my letter No. 32 M. of the 29th January last, to pay the necessary wharfage and license-fees on your boats using the canal, as prescribed in the Navigation rules.

(Signed) F. J. WILSON,
10th March 1896. *for* Chief Engineer for Irrigation.

From Messrs. BINNY AND CO., to the Chief Engineer for Irrigation, dated Madras, 13th March 1896.

We have the honour to acknowledge receipt of your No. 118 M. of the 10th instant.

In reply to your enquiries we undertake and guarantee to meet the cost of raising the railway girder bridge near the basin if considered necessary by the Irrigation department, to meet the necessities of canal traffic for the benefit of the Buckingham and Carnatic Mills.

We are also prepared to make use of the canal to the utmost of our power and pay the usual wharfage and license-fees on our boats using the canal as prescribed in the Navigation rules.

No. 67 I.

Submitted to Government. The total amount of the estimate has been reduced in this office from Rs. 9,450 to Rs. 9,340, owing to errors found in the calculations for woodwork in the estimate for alterations to the Magazine bridge.

(Signed) R. R. E. DRAKE-BROCKMAN, Col., R.E.,
19th March 1896. Chief Engineer for Irrigation.

ORDER—No. 392 I., dated 5th May 1896.

The following estimate is sanctioned from the balance available for unforeseen works of the Buckingham Canal, which will then be reduced to Rs. 1,53,627 :—

Irrigation.
43. Minor Works and Navigation.
Minor Works for which Capital and Revenue Accounts are kept.
Capital Account.
Buckingham Canal.
2. Main Canals and Branches.
Making the Otary nullah navigable and providing a boat basin therein.

		Rs.	Rs.
6. Other cross drainage works.	1. Constructing a culvert	390	
			390
7. Bridges	2. Alterations to Division office bridge ...	1,180	
	3. Alterations to Magazine bridge	420	
			1,600
12. Earthwork	4. Forming a road way to proposed basin ...	1,560	
	5. Deepening Otary nullah	2,990	
	6. Providing boat siding or basin	2,760	
			7,310
15. Miscellaneous	7. Demarcating canal lands	40	
			40
	Total estimate ...		9,340

2. This sanction is registered as No. 22 I. of 1896–97.

(True Extract.)

Under Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
„ the Superintending Engineer, II Circle, with plans and estimate.
„ the Examiner, Public Works Accounts.
„ the Revenue Department.
„ Messrs. Binny & Co.

Exd. T. K. Narayana Aiyangar.
Spare Copies

IRRIGATION.

Govt. of {1896} Madras.

PUBLIC WORKS.

Dated May, 5th.

Read. *Encl.*

G.O. No. 392 I., 5th May 1896.

MAY.

Otary Nullah

Estimate of Rs. 9,340 for making the — navigable and providing a boat basin therein, Buckingham canal, sanctioned.

PUBLIC WORKS DEPARTMENT,
IRRIGATION BRANCH.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

UNDER date the

READ the following

From Messrs Binny & Co. dy. 23.6.94
To do. No. 341 M dy. 28.6.94
From do. dy. 27.8.94
To Supdg Engr A 358 C. dy 4.9.94
From do. 379 HC dy 13.2.95
To Messrs Binny & Co. No 82 M dy 19.2.95
From Supdg Engr II 399 HC. dy 1.3.95
To do 158 C. dy 6.3.95
From do. 102 C. dy 6.12.95
To Messrs Binny & Co. 32 M dy 29.1.96
From do dy 5.2.96
To Consltng Engr for Rys. 31 M dy 29.1.96
From do. 539 dy 18.2.96
To Supdg Engr II 67 HC dy 24.2.96
From Dy do 3 3.96
To Messrs Binny & Co. 451 HC dy 10.3.96
From do 118 M dy 13.3.96.
dy No 67 dy 18.3.96

Submitted to Govt. The total amount of the estimate has been reduced in this office from Rs 9,460 to Rs 9,340 owing to errors

P. W. CURRENT No. 3316

Intimate for meeting re Otary nullah navigable (providing about to pass thereon Ordered 2.4.96

RECD CHIEF SECRETARY'S OFFICE 23 MAR 1896 GOVT OF MADRAS

To
The Hon'ble the Chief Secretary to Govt. Secret Revenue Dept
The Joint Secretary to Govt. P.W.D. Ry Branch
for favor of communication

-x- see slip marked

The Dept has been communicated in Lr R. Dept.. I presume that in his letter of 20.2.95 no 2826 the Exec. Engr remarks that the Madras Municipality &c &c... have all been communicated with regarding the necessary alterations to bridges &c & have acquiesced. [illegible]

E. I. Form No. 1—500—14-5-95

BINNY & Co
MADRAS.

1 Plan

S.M.P.L. Madras, 28rd June, 1894

The Chief Engineer & Joint Secretary to Government
Irrigation Branch
P. W. D.
Madras.

Sir, We have the honor to enquire whether there is any prospect of the Buckingham Canal being made navigable and connected with the Otary Nullah as far as the Buckingham and Carnatic Mills —.

There is a heavy traffic in Firewood to these Mills which consume about 5000 Tons of green wood per mensem a great deal of which comes by Canal and the convenience of delivery of which would be greatly facilitated by the extension of the Canal —

If the scheme which we understand is under consideration of connecting the Canal with the Harbour is completed there would be a constant traffic to and from the Harbour of Import and Export

BINNY & Co
MADRAS.

2P

goods to and from the Hills.

We have the honor to be,

Sir,

Your most Obedient Servts.

per

Ro 34 tm d/ 28.6.94

To

Messrs Binny & Co.
Madras

Gentlemen.

In acknowledging your letter dated 23 June 1894, I have the honor to inform you, that the subject matter regarding the Buckingham Canal being connected with the Rotary Nullah as far as the Buckingham and Carnatic mill has never come before me for consideration before, but that of the idea of connecting the Canal with the Madras Harbour is one I never seriously entertained. I presume probably the question of connecting the Rotary Nullah with the Canal will also be considered

Ans[d]
28/6

Re

Forwarded to the Superintending Engineer, Second Circle for early report.

Chief Engineer's Office
Vepery
28 June 1894

Ro

Ro 3516 28/6

BINNY & Co
MADRAS.

S.M.P.L. Madras 27th August 1894.

The Chief Engineer for Irrigation
Potacamund.

Sir,

We have the honor to acknowledge receipt of your letter No 341 W of the 28th June last-

We have the honor to point out that the proposal to connect the Buckingham & Carnatic Mills with the Buckingham Canal by the deepening of the Rotary Nullah is a very small matter and we trust you will consider it separately and on its own merits.

There do not appear to be any difficulties in the way and we think only one bridge would be required.

The Railway Bridge over the Nullah is low but we think affords sufficient clearance for cargo boats of the ordinary size. The Casuarina Plantations round Madras are practically exhausted and it is only by making the means of transport as cheap as possible that it will pay Merchants & Contractors to bring

BINNY & Co
MADRAS.

bring it up from a distance.
Any further information you may require we shall be glad to supply.
We have the honor to be,
Sir
Your most Obedient Servts.

CHIEF ENGINEER
No 441 Da
31 AUG. 94
FOR IRRIGATION

262 BC
15 SEP. 94

II
No 35 B.C

From The Chief Engineer
for Irrigation

To The Supdg Engineer
2d Circle

Referred to the Superintending Engineer, Sukkur Circle, for report and approximate estimate of Cost.

(By order)

Dated 4-9-94
No II
35 BC

Proposal to Connect Buckingham & Carnatic Mills with the Buckingham Canal - forwarded for report & approximate Estimate of the Cost, letter from Messrs Binny & Co. regarding the -

W. Marsden
4/9
Officiating Asst Chief Engineer
4th September 1894.

W

3421

To be returned with reply.

No C-3
23/1894

Encls. to No 3790 BC
13.2.95

3429

Letter from the Executive Engineer, Buckingham Canal, to Messrs. Binny & Co., Madras, dy 24.1.95, No. 2510.

With reference to your letter, dy 27th August 1894 to the Chief Engineer for Irrigation, regarding the proposal to connect the Buckingham and Carnatic Mills by means of deepening the Otary Nullah, I have the honour to remark that the necessary alterations to the bridges, unless the dimensions of the boats are reduced as proposed in this letter, will involve considerable outlay which it is doubtful whether Government will sanction. If you can limit your proposals to those noted below, I can submit the estimate in a complete shape to Government at an early date.

2. I would advise your using coal instead of firewood, since firewood boats, unless only half loaded, require much more headway than is available under the bridges, or can be made available

available, except at heavy cost. Top boats from 15 to 20 tons o— (a very common tonnage) would be most suitable and their tops should, (if necessary) be temporarily removed for convenience of passing bridges. During the two or three months the Kistna Canals are closed, you could arrange to have stocks of coal at Sike or can temporarily use firewood by carrying half loads.

3. The Buckingham Canal, when the Canal from the Harbour and regulating work at Cooum mouth have been constructed, will be tidal; its surface level will vary from +2·64 M.S.L. to -2·44 M.S.L. and will daily be about M.S.L. or 1 ft: higher for some little time. It will be best to arrange, therefore, that your boats shall pass under the bridges when the water level varies from M.S.L. to 1 ft above.

4. Alterations required to 3 arch ~~over~~ Culvert over Otary Nullah near Buckingham Canal Office:

This culvert is a great obstruction. Its centre arch will have to be entirely knocked away and an iron girder, at a higher level, placed between the piers of the centre arch. The floor will also have to be lowered. At the present water level of +1·40 M.S.L. there is only a headway of 4½ feet, decreasing rapidly from centre of elliptical arch and a depth of 2½ feet of water. I propose to increase the headway by 1 foot and to make it uniform between the piers which are 14 ft: apart, and to lower the existing floor by 2 ft: This will allow of a boat of maximum beam, Viz, 13 ft: 3 ft draught, and 6 ft headway passing through at any time, when the surface water level varies from M.S.L to 1 ft: above.

5. Alterations required to Railway Bridge about 100 ft: west of 3 arch Culvert.

The floor under this bridge will require to be lowered 2½ ft: in order to allow of the necessary minimum draught of 3 ft: This will be all that is necessary and will allow of

of the beam and headway noted in preceding para.

6. Alterations required to Bridge at Gunpowder Magazine.

Unless one of the piers of this bridge is knocked away; and the flooring lowered considerably, it will be impossible to pass a boat of the dimensions above noted through it. The Military Department will probably object to such alterations and enquiries have been made from them on the matter. If they refuse to permit the necessary alterations, a diversion will have to be made to the North of the Magazine, and a new bridge will be necessary over this diversion. This bridge will be given the dimensions already noted above in para 4.

7. Termination of Canal through Olary nullah.

I do not think the Government will consent to carry the Canal beyond the Causeway as it will involve considerable outlay. I, therefore, propose to terminate it at Causeway.

8. If the proposals in paras 2 to 7 inclusive of this letter will suit you they will be estimated for as soon as possible. I have considered them carefully and I think they will be found to combine efficiency with economy. If you require them modified in any particular kindly inform me.

No. 2511.

Copy to Supg Engineer, 2nd Circle, with reference to his No. 219 BC. d/ 21-9-94.

Camp Penrice Rec'd 24-1-95 } 507 A.S. Russell Ex Engr: Buckingham canal

Encl 1.

No. 379 BC / 13-2-95 Submitted to the Chief Engineer for Irrigation with reference to his endorsement No. II/35 B.C. dy 4th September 94 on letter from Messrs Binny & Co, Madras, returned herewith.

W.W. Badcock Major R.E.
Supg Engr: H. Cuthbert

From

The Supg Engineer

Second Circle

R1238
15 FEB. 95

To The Chief Engineer

For Irrigation

Dated 13th February 1895

Encld 1

No 379 BC

4-5 Dist
3/16/95

Proposal to connect the
Buckingham & Carnatic
Mills —
Forwarding copy of C.E.'s
remarks addressed to
Messrs Binny & Co re —

No 82 dt 19-2-95

To

Messrs Binny & Co

Gentlemen,

With reference to your
letter dated 27 August 1894,
I have the honor to say that
a reply to it will be sent when
the result of the reference made
to your firm in letter No 2570, dated
24 January 1895, by the Executive
Engineer, Buckingham Canal
Divn, on the subject, is known.

WS 16-2

Pmedh
19/2

R.S.S.
3316/56

Letter from A. S. Russel Esquire, Executive Engineer, Buckingham Canal Division, to the Superintending Engineer, 2nd Circle, No 2826, dated 20th February 1896.

—

In continuation of this office No 2011 dated 24th ultimo, I have the honour to report as follows on the proposal made by messrs Binny & Co to make the Otary Nullah navigable.

2 The approximate minimum cost of doing so, as recommended by me in my letter to messrs Binny & Co, and as accepted by them in their reply, is Rs 7,000. The Municipality, the Madras Railway, and the Military Department, have all been communicated with regarding the necessary alterations to bridges, and have acquiesced in the proposals made by me. There is thus no difficulty in making the Otary Nullah navigable.

3 I think there can be little

doubt that by making the nullah navigable, and thus giving the Buckingham and Carnatic Mills and other industries facilitaties for obtaining both coal and firewood very cheaply, a great impetus will be given to the demand for carriage of coal and firewood by canal. Messrs Binny & Co inform me that their Mills alone will take 5,000 tons of firewood per month, or 60,000 tons per year. The total tonnage of firewood now carried by canal is only 80,000 tons, and this figure at present represents the total consumption of firewood from all sources put together.

4 By making the Otary Nullah navigable, a considerable extent of low waste swampy ground will be brought into connection with canal, and will afford means of making a large boat basin at a small cost. Extra span for boats at the Madras wharf is already very much required, and must be provided for. Someday, the whole width of the canal at the wharf being now at times crowded with boats to the great inconvenience of passing traffic, when the Railway line crosses the wharf, the available space for boats will be more cramped than ever, and I do not know where extra space can be conveniently obtained except at a boat basin leading from the Otary Nullah & to enable boats to pass to this boat basin, more headway must be given to the two bridges than was proposed by me in my letter to Messrs Binny & Co, but the total cost of the combined Project will not exceed Rs 10,000.

5 I think the combined scheme for making the Otary nullah navigable, and for providing further boat accommodation will well repay its cost, and I recommend it for sanction

6

6 Detailed estimates will be prepared and forwarded, if preliminary approval to the working of the Project is given.

108

No 399 B.C.
1.3.95

Submitted to the Chief Engineer for Irrigation in continuation of this office No 379 B.C. dated 13th February 95.

The undersigned strongly recommends the Combined Scheme.

W. Baddeley
Major R.E.
Superintending Engr.
2nd Circle.
25-2-95

From,

The Superintending Engineer,

II Circle.

To,

The

Dated

Received } 18

Enclosures.

NO.

SUBJECT.

From

The Supg Engineer
Second Circle

To the Chief Engineer
for Irrigation

Dated 1st March 1895

No 399 BC

Otary nullah —

Forwards with remarks
copy of Ex Es letter reporting
on the proposal to make
the — navigable.

16 BC
MAR 95

Rec'd 6/3

No. 15 BC 96-3-95

II

Memo

with reference to
endorsement, no 399 BC
of 1st inst, of the Supg.
Engr, II Circle, the under-
signed has the honor
to inform him that
the combined scheme for
making the Otary nullah
navigable for providing
further boat accom-
modation is approved
& request that the
preparation of the detailed estimates for the work may be put in hand for early submission.

6-3

Rec'd 6/3

To The Supg Engr
II Circle

Superintending Engrs Office
1 Circle.
Date 5th December 95.

No. 102. C.

From,

A. S. Russell Esquire
Offg Superintending Engr
1 Circle.

To

The Chief Engineer,
for Irrigation,
Madras.

Enclosures
7 Plans
1 Report & Estimate
6 Estimates
1 Qty Abstract
1 Classified do.

Sir,

With reference to your endorsement No. 11/15 BC, dated 16th March, 1895, I have the honor to forward an estimate, amounting to Rs 9,450/, for making the Otaty Nullah at Madras navigable & for providing a boat basin therein. The Report accompanying explains the object and necessity for the works proposed.

2. The working out of this City Scheme, as in the case of most projects in Madras town, has involved numerous references, and has occupied much time, and the

Scheme

Scheme, as now laid out, provides for the various interests involved.

3. Financially there is no doubt that the making of the Nullah navigable will well repay the cost, while the provision of Extra boat accommodation is essential in order to relieve the congested State of traffic which so often now occurs at the Madras wharfs, and which will be intensified by the additional traffic that will spring up when the Harbour Canal is opened.

4. The cost of raising the Railway bridge 11/2 ft. (being as much as Rs 6000) has been left to Messrs Binny & Co to bear, should they ultimately decide, as they probably will do, to pay for the work. So far as Government interests are concerned, the work is not essential, but the estimate provides for raising the other bridges to the same height, viz 7.75 ft above M.S.L, the Extra cost involved by so doing being small.

5 The Nullah will be tidal when the Harbour is in operation, and Coal, firewood, and Cargo boats will be able daily to navigate it, at favorable stages of the tide, even with a headway of only 6 1/4 ft above M.S.L. The inadequate headway of the Existing bridges, & the weakness of their foundations, has been a great stumbling block in preparing a satisfactory Scheme, & the estimate, as drawn up, provides, at a moderate outlay, for the best possible arrangements of headway at bridges and depth in Nullah.

6. Provision is made in the programme of Expenditure of the Buckingham Canal for 1896-97, for Execution of the works & the early sanction of the estimate is recommended for the approval of Government.

I have the honour
Your Excellency's

CHIEF ENGINEER
FOR IRRIGATION.
7 DEC 95
No. 9542

From.

The Supt. Engr.
Hicks.

To

The Chief Engineer,
For Irrigation.

32/23269/95
No. 102-6.
Dated 6th November 95.
Encls: 16

—

Otary Nullah Scheme.
Forwards plans & esti
mates for the —

No. 32 dy 29 Nov 95

To 150

Messrs Binny & Co.

Gentlemen.

In forwarding herewith plans and Estimates & Report for making the Otary Nullah navigable and providing a boat basin thereon for any remarks you may have to offer and return I have the honor to inform you that the Nullah will form a part of the Madras Wharf and that wharfage fees will be levied on all boats loading and unloading at the Nullah in addition to licence fees and irrespective of your undertaking the work of raising the Railway Bridge —

Ld 29/11

29-1-96

No. 31 M dy 29-1-96

Gen

BINNY & Co
MADRAS.

160

Madras 5th February 1896

Col: R. A. E. Drake Brockman R.E.
Chief Engineer for Irrigation,
Chief Engineer for Irrigation Offg
Madras.

16

Sir,

We have the honor to acknowledge
receipt of your letter No. 32 M of the 29th ult.
& to thank you the enclosures which you
sent us & which we now return herewith.

We have no remarks to offer &
so far as we can judge the proposed work
will answer our requirements satisfactorily.

We have the honor to be,
Sir
Your Most Obdt Servt

HMH.

Vetrem No. the proposed
raising of the bridge.

30/1

30.1.96

35.9
53 M/96

CHIEF ENGINEER
FOR IRRIGATION
6 FEB 96
No 796

Dated 10
30th/96

No. 31 dated 4-1-96

To

The Consulting Engr
for Railways.

Sir

It is proposed to make the Otary Nullah, which falls into the Buckingham Canal at the Madras Basin navigable at the request of Messrs Binny & Co. to facilitate transport of Coal, firewood, stores &c to the Carnatic Mills. It is found necessary to raise the girders of the Madras Railway bridge near the Basin 1½ feet high and Messrs Binny & Co. think that they may themselves pay for this work which is estimated to cost Rs 5,000. I have the honor to request that you will be so good as to inform me whether the Madras Railway Co. would have any objection to the proposed raising of the bridge.

I have &c

30/1

Form No. 69.

Copy of a communication from the Agent and Manager, Madras Railway,

to the Consulting Engineer for Railways, Madras,

No. 8904/132, dated 17th February 1896.

With reference to your endorsement No. 358 of the 4th instant, on Copy of a communication from the Chief Engineer for Irrigation regarding the proposal to raise the girders of the Madras Railway bridge near the basin in order to make the Adaiar Nulla Navigable, I have the honor to forward herewith for your information Copy of a letter addressed to me by our Chief Engineer on the subject.

Your attention is specially invited to paragraph three of the above letter.

No. 539 dated 18th February 1896.

Forwarded to the Chief Engineer for Irrigation.

The Consulting Engineer agrees with the views expressed by the Chief Engineer, Madras Railway.

for Consulting Engineer for Rys.

with 1 Enc:

CHIEF ENGINEER FOR IRRIGATION. C. MAR. 96 No. 2756 2

CHIEF ENGINEER FOR IRRIGATION. 28 FEB. 96 No. 1031

Desc. 13 33 6/26

SUPG. ENGINEER'S OFFICE. No. 2 la. 27 FEB. 96 SECOND

No. 7124. / 188

Madras Railway Company
Chief Engineer's Office
Madras 14th February 1896.

The Agent and Manager,

Dear Sir,

Raising Bridge at 1/14 miles.

Your endorsement dated 6th instant on Consulting Engineer's Note No. 358 of 4th I drew on Copy of a Communication from the Chief Engineer for Irrigation.

There is no valid objection to the raising of the girders over the bridge in question so as to afford an increased head way of 1½ feet. The work, however will be troublesome to carry out as it involves working the train service on one track of the double line for some days during the progress of the work. The estimated cost of raising the girders and the line on each side is Rs 5,000/ which will have to be borne by Messrs Binny and Company. It is however understood that Messrs Binny and Company are not prepared to incur this outlay until it has been ascertained that the present headway will be insufficient after the conversion of the Colaroy Nullah into a navigable channel.

2. Under these circumstances I would suggest that the proposal to raise the girders be

be deferred until after the Colaty Nullah has been deepened and made navigable and the present headway tested with boats loaded with coal and other stores.

Messrs Binny and Company further point out that if it be contemplated by Government to alter the other (road) bridges which span this Nullah, it would be advantageous to have the full headway available provided, so that in the event of it being found ultimately necessary to raise the Railway Bridge the outlay would be limited to this single structure and I shall feel obliged if the attention of the Consulting Engineer can be invited to this request.

Yours faithfully
/Sd/ Henry C. West
Chief Engineer.

/True Copy/
/Sd/ A. Edwards
for Agent & Manager.

CHIEF ENGINEER FOR IRRIGATION. 20 FEB 96 No. 1/5C

CHIEF ENGINEER FOR IRRIGATION. 6 MAR 96 No. 275C

SUPERINTENDING ENGINEER'S OFFICE No. 1/3 27 FEB. 96 P.W.D. SECOND CIRCLE

Letter from the Consulting Engineer for Rys: No 539 dated 18th Feb: 1896.

No 17 BC dt 24.2.96

Forwarded to the Superintending Engineer II Circle for remarks. It will be seen that Messrs: Binny & Co: propose to defer raising the Railway bridge but suggest that the other bridges should be raised to the full height originally proposed viz 7.75 ft + M.S.L. In the report attached to estimate it is stated that the extra cost necessary to raise these bridges to 7.75 ft + M.S.L instead of to 6.25 ft + M.S.L (the present height of railway bridge) is insignificant.

(Signed) R.M.E. Drake Brockman
Col R.E.

Report to accompany the estimate for making the Otary Nullah at Madras navigable and for providing a large boat basin for providing for traffic at the Madras wharf. Estimate Rs 9,450.

228

—

Otary Nullah .- The Nullah enters the Madras District in Kilpauk, and running in an Easterly and Northerly direction falls into the Buckingham Canal at the Madras Basin - passing in its course the Carnatic Mills. The proposal to make the Otary Nullah navigable originally emanated from Messrs Binny & Co, so as to facilitate transport of Coal, firewood, Stores, &c to these Mills. Messrs Binny & Co estimate that about 36,000 tons of materials per Annum will be used by the Mills alone. A further increase of traffic should also develop, if the Nullah is made navigable, and a great impetus will be given to the Fuel & Coal traffic by Canal.

Financially the Scheme will be profitable to the Canal revenues.

Water available for traffic. The available headway is limited by the height of the Madras Railway Bridge near Basin. This height is only 6·25 ft above the piers M·S·L. and the cost of raising it 1 1/2 ft -

is

is Rs 5,000. As Messrs Burney & Co think that they may themselves pay for this work, by Govt the other bridges will be raised so as to give the same headway, 7·75 ft above M.S.L., the extra cost being insignificant. The Estimate has been made provision accordingly.

When the Harbour Canal is Completed, the Otary Nullah will be tidal, and a surface level of M.S.L or below will probably be reached daily, allowing boats with headway not exceeding 7 3/4 ft to navigate the Nullah. The bed of Nullah will be deepened to 3 ft below M.S.L. with bottom width 20 ft, and side slopes 4 to 1. The Nullah as it exists is wide and well defined, and only needs deepening to the level proposed. Further deepening would interfere with the foundations of Bridges, and is inadvisable. These conditions which will limit the use of the Otary Nullah to boats of headway not exceeding 7 3/4 ft and with a draught not exceeding 2 1/2 ft, have been explained to Messrs Burny & Co who have accepted them. The length of Nullah proposed to be utilized is about 5,980 ft i.e from the Madras Basin to the Causeway near the Mills.

Works estimated for

Three

Works estimated for

Three arch Bridge near the Buckingham canal office.

23 & 8

This bridge at present is very low. It is proposed to utilize the Centre archway for the passage of boats. To Secure the necessary height of 7·75 ft above M.S.L the adjacent piers will be raised and the Centre span crossed by Wrought Iron Girder bridge of rolled beams carrying Corrugated iron flooring. Amount of Estimate. Rs- 1,180.

Powder Magazine bridge.

The Nullah is crossed at the Powder Mills by a narrow wooden bridge. To make it available for traffic, it is proposed to lower the floor to 3 ft below M S.L, to dismantle the Centre pier, and to replace the existing timber work by new beams long enough to suit the increased span Estimate Rs. 530.

Deepening bed of Nullah

To deepen the Nullah to 3 ft below M S.L. allowing a bed width of 20 ft, & side slopes 4 to 1 entails a cost of Rs 2,990.

The total cost of improving the Nullah for traffic stands thus:—

1 Alterations to 3 Arch bridge	Rs- 1,180
2 Do — to Magazine Bridge	Rs. 530
3. Deepening bed of Nullah	Rs- 2,990
4 Demarcating Canal Canals	Rs — 40
Total	4740

By making the Otarya Nullah navigable, a large extent of low and waste ground will be brought into Connection with the Canal, thus affording the means of making a large Boat Siding or Basin at a small cost. Extra accommodation for boats is much needed, the space available at the Madras Wharf being already very limited to cope with the increasing traffic. The boat basin here proposed will afford a lay by 700 ft in length for boats not exceeding the limits of headway and draught already mentioned. The basin will be 90 ft wide from centre of canal passage, and will have water slopes 3 to 1 protected with turf sods. The platform will be raised 7 ft above M.S.L. and will be metalled for a width of 15 ft.

Amount of Estimate Rs. 2,760

Proposed large boat basin west of Railway Bridge.

* This space inadequate as it already is, will be further curtailed when the Railway crosses the Basin.

A Russell
5-12-95

To facilitate traffic from this Siding it is proposed to form a roadway 1390 ft long connecting Boat Siding with the Main Basin Bridge road. Such a road will be very useful. The metalled width will be 15 ft. A culvert 3'x3' vent will be required at the Southern end to pass the local drainage which will be impounded on the eastern Side of the Roadway.

Proposed roadway from Boat Siding to Madras Basin Bridge road

Amount of Estimate Rs. 1560

2458
24

It is intended to make a short diversion of the Otarya Nullah into the Buckingham Canal to facilitate its being bridged and at the cost of the Madras & East Coast Railway and will not affect this estimate. ~~appreciably.~~ A tracing accompanies the estimate showing the proposed diversion and Railway lines.

Total Cost.

The total Cost of the Combined Scheme will be as under:-

1 Making Otary Nullah navigable	}	Rs. 4,740
2 Providing Boat Siding and Roadway	}	" 4710
Total		9,450

J W Smyth
Executive Engineer
Town Improvement Scheme

A Russell
Asst. Engr. 2nd Class
5-12-95

CHIEF ENGINEER
FOR IRRIGATION.
7-DEC.95
No. 9538C

CHIEF ENGINEER
FOR IRRIGATION.
6-FEB.96
No. 2211

CHIEF ENGINEER
FOR IRRIGATION.
6-MAR.96

11/457BC

95/3376/D

Olary Nullah Scheme

Report of the —

260

Superintending Engineer's Office,

No. 457-BC

II CIRCLE,

Dated 3 March 1896.

From,

Major W. L. C. Baddeley ~~Esquire~~, R. E.

Superintending Engineer,

II Circle.

To,

The Chief Engineer

For Irrigation

Madras.

Sir,

In reference to your No. II/17 BE. dy 24th Febry 1896 I have the honour to report that I see no objection to deferring the raising of the Railway bridge to 7.70 + M.S.L.

2. There is also no objection to the other bridges being altered so as to provide a head way of 7.75 + M.S.L.

3. Messrs. Binny & Co should however, guarantee that they will use the Canal, and if considered necessary by this Department pay for the raising of the Ry: bridge to 7.75 + M. S. L.

I have the honour to be
Sir
Your most obedient
W. L. Baddeley Major R.E.
Superintending Engineer
II Circle

CHIEF ENGINEER
FOR IRRIGATION.
Cr. MAR 96
No. 2[illegible]

From

The Supdg: Engineer
Second Circle

To

The Chief Engineer
for Irrigation

No. 457 BC

Dated 3rd March 1896

Encls 16. (6 Plans
Sent Separately)

From,

The Superintending Engineer,

II Circle.

To,

The

Dated

Received } 18 .

Enclosures.

NO.

SUBJECT.

Ord. 30
3346/8

Subject

Railway Bridge near
the Basin to make the
Ottary mullah navigable—

Informs that he has no
reason objection to deferring
the raising of —— [illegible]

118 to dy 10-3-96

Mess^rs Binny & Co
Madras. 27

Gentlemen,

With reference to correspondence ending with your letter of the 5th February 1896 regarding the Ottary Mullah scheme, and before submitting the estimate for the orders of Government, I have the honor to inform you that you will guarantee to meet the cost of raising the Railway (if considered necessary by) girder bridge near the basin to make use of the Canal when made navigable and, as mentioned in my letter No. 32-M. of the 29th January last, to pay the necessary wharfage and precise fees on your boats using the Canal, as prescribed in the Navigation rules.

I have &c

[illegible]

10/3/96.

BINNY & Co
MADRAS.

S.M.

Madras 15th March 1899

The Chief Engineer,

for Irrigation.

M a d r a s.

Sir,

We have the honor to acknowledge receipt of your No 118 M of the 10th inst.

In reply to your enquiries we undertake and guarantee to meet the cost of raising the Railway girder Bridge near the Basin if considered necessary by the Irrigation Dept to meet the necessities of Canal Traffic for the benefit of the Buckingham and Carnatic Mills.

We are also prepared to make use of the Canal to the utmost of our power and pay the usual wharfage and license fees on our boats using the Canal as prescribed in the Navigation Rules.

We have the honor to be,

Sir,

Your Obedt Servants

CHIEF ENGINEER
FOR IRRIGATION
14 MAR. 96