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MADRAS RECORD OFFICE

Government of Madras

Public Works DEPARTMENT

G.O. No.	2549	Press
B.P. No.		Mis.
305-5307		
Dated	1.8-10-	195/873

Not to be folded or roughly handled

Read the following papers :—

No. 305. Read the following endorsement of the Chief Secretary to Government, dated 29th July 1873 :—

From J. H. MASTER, Esq., Collector and President of the Municipal Commission of Bellary, to the Hon. W. HUDLESTON, Chief Secretary to Government, Fort St. George, dated Bellary, 26th July 1873, No. 43.

I HAVE the honour to forward copy of a letter, No. 275, dated the 28th May, from the Vice-President, Municipal Commission, Bellary, on the subject of the excavation of a channel from the Toongabuddra river to the town of Bellary.

2. Although this is the first time the Commissioners have urged the matter, for the sake of obtaining a supply of water for the town itself, the proposal to excavate such a channel is not a new one. The following is an abstract of the correspondence on the subject.

3. In G. O., Public Works Department, No. 2,773, dated the 24th September 1863, the importance of the subject was duly recognized, but Captain Fischer, in the letter embodied in the order, expressly stated that the canal, if made, would not come in the direction of Bellary itself, but far to the north of it. He further stated "to supply the Cantonment of Bellary with water from the Toongabuddra would necessitate the alteration of the canal's inclination to such an extent as to make its capacity for carrying water for irrigation as well impracticable; three or four times the quantity of work would have to be done; but on this subject *I have already submitted a project to Government.*"

4. In G. O., Public Works Department, No. 184, dated the 18th January 1864, the Government remarked that "as regards the irrigation of the plains *surrounding Bellary*, the Government believe that it is from Bullabhappooram alone that a channel can be led for that purpose, but the survey of the country and the levels that have been already taken show such vast, if not insuperable, physical difficulties to exist, as to satisfy the Government that the work is of greater magnitude than can at present be undertaken by the State."

5. G. O., Public Works Department, No. 2,606, dated 20th August 1866, runs as follows :— "The Government are well aware that the only certain and effectual mode of supplying the means of irrigation to the plains of Bellary is the construction of a sufficiently capacious canal from the Toombuddra at or near Wallabhappooram; but this project, though originally investigated by members of the Department of Public Works, with a view to its being undertaken by the Government, forms a part of "the Toombuddra Project," referred to in the preamble of the Madras Irrigation and Canal Company's Contract, and is held in abeyance pending the completion of the works which the Company have in hand below Kurnool.

"The present state of Bellary, however, shows that no more time can with safety to the district be lost in carrying out some extensive scheme for the improvement of the irrigation, and as the only one likely to be successful is that of the Toombuddra Canal from Wallabhappooram, an appeal will at once be made to

the Secretary of State to call upon the Company to begin that part of their enterprise which consists of the conveyance of water for irrigation from the Toombuddra to Bellary by means of a canal from Wallabhappooram, or upon their inability so to do at once to authorize the canal being undertaken by this Government."

6. In September 1866, the prospects of the district were so unfavourable that the Collector, to give employment to the starving people, urged the commencement of the line which had been selected for the 6th Section of the Madras Irrigation and Canal Company's proposed canal from the Toongabuddra at Wallabhappooram to Bellary; as however this could not be done without a reference to the Agent, and by him to his Board, and till an understanding had been come to between the Company and the Secretary of State, the Government, in their Order, Public Works Department, No. 2,879, dated the 10th September 1866, declined to sanction it.

7. In March 1867, the Collector made a report upon the irrigation requirements of the district, urging again the advantage of commencing the Toongabuddra Project. The Board of Revenue strongly supported him. The Government in their Order, Revenue Department, No. 734, dated the 28th March 1867, remark: "The practicability of the Toombuddra Project has yet to be established, and while it forms part of the Irrigation Company's scheme, and must be left to them if they are prepared to undertake it, its execution appears likely, from the Consulting Engineer's report, to occupy much more than five years as estimated by the Collector."

8. A long report upon the line to be taken by the canal was submitted to Government by the Consulting Engineer, Irrigation and Canal Company, on the 30th January 1867. The adoption of this line would have brought water into Bellary itself. Upon this letter Government passed orders in their Proceedings, Public Works Department, No. 518, dated 21st February 1867, but giving no definite decision. Since then no final order on the subject appears to have been received in this Office.

TRANSFERRED to the Department Public Works for disposal.

(Signed) W. HUDLESTON,
Chief Secretary.

No. 33A.

No. 306.

Note by the Chief Engineer for Irrigation.

WATER for the Town of Bellary from the Toombuddra, if supplied by gravitation, must be brought from Walavapore or its neighbourhood. A scheme for a canal from this point has been investigated by the Madras Irrigation and Canal Company, and its details are given in the papers printed in Proceedings, Madras Government, No. 518, of the 21st February 1867. A few months afterwards, in the same year, the line of this canal was inspected by Lord Napier, who was accompanied by the then Secretary in the Public Works Department, as also by the officer who had investigated the project, Mr. Gordon, and the general result

was that the tunnels under the Nellapoor summit and through the hills of rock on the margin of the Darojee Tank were considered to present such difficulties in the way of estimating the probable cost of the work as to make it desirable to seek an alternative line, although it was known that the latter would not command the town of Bellary.

2. Consequently a low level line for this, which has been termed the Upper Bellary Project, was carefully investigated by Mr. Gordon, and was reported on to Government by the then Consulting Engineer in a letter, No. 120, dated 11th January 1870, while an illustrative map was submitted on the 14th February following, with letter No. 136. On these communications no orders appear to have been passed, but I may remark that, though this low level line needs no tunnels, and much of its length of 83 miles runs through easy country, it presents difficulties quite as, if not more formidable, than those of the high level line from Walavapore. I have not copies of the plans, etc., forwarded by the Consulting Engineer, but the following particulars taken from his letter, No. 120, will indicate what costly works would be necessary. In the second section, $6\frac{1}{2}$ miles in length, there are seven walls required, the greatest depth of water to be retained being 90 feet and the least 58 feet; this probably refers to the depth at the lowest ground crossed by each wall.

In the 3rd section there are the Timmapore cutting, 800 yards long and $43\frac{1}{2}$ feet deep at the summit, another cutting 64 feet deep, another 1,900 yards long and $40\frac{1}{2}$ feet deep. Also $1\frac{1}{2}$ miles of wall altogether, the greatest depth of water against which would be $59\frac{1}{2}$ feet and the lowest $48\frac{1}{2}$ feet. The works for crossing the drainage of the country are likewise very heavy.

3. The cost of the high level line from Walavapore was estimated at—

For a perennial supply	...	...	...	Rs. 143,88,000
For water for a single crop...	...	...	...	„ 116,70,500

and the area to be irrigated being 150,000 acres, the outlay per acre would be in the one case 95.9 and in the other 77.8 rupees per acre. Similarly, the cost of the low level line from Hoosoor has been estimated at Rupees 165,24,640, including storage for a second crop, while without storage it would be about 128 lacs, and the area for which a supply would be carried being 212,500 acres; the cost per acre would be 77.9 and 60 rupees, according to whether storage were provided or not.

The estimated net returns from the high level project with storage were 10.88 per cent., but further experience inclines me to believe that the area of the second crop will never be two-thirds that of the principal crop, and that consequently these returns are somewhat over-estimated. The net returns from the same project without reservoirs were considered likely to amount to 8.42 per cent.

For the Hoosoor Low Level Project the net returns were calculated to amount

10.80 per cent. with reservoirs, and
8.00 do. nearly without storage.

*Proceedings of the Madras Government, Public Works Department,
18th October 1873.*

4. It must here however be noticed that in calculating the returns of the two projects different data were used, as follows :—

		High level.	Low level.
Water-rate, 1st crop	...	8½	6
Do. 2nd crop	...	6½	6
Charges per cent. on cost of construction	...	2½	2

and adjusting the former to the latter to allow of comparison, the following general results are shown :—

	COST.		Area of Irrigation.	NET RETURNS.	
	WITH	WITHOUT		WITH	WITHOUT
	Storage.			Storage.	
	RS.	RS.		ACRES.	PER CENT.
High Level Project from Walavapore ...	143,88,000	116,70,500	150,000	8.42	5.71
Low Level Project from Hoosoor	165,24,640	128,00,000	212,500	10.80	8.00

5. For all practical purposes it may, I think, be assumed that a project including extensive storage works is not very likely to be carried out, seeing how difficult it is to find suitable sites for reservoirs, while such as have been found are in foreign territory. It has then to be considered whether there is any probability of either of these large projects, omitting storage, being carried out either by the Madras Irrigation and Canal Company, or by Government.

6. The Company will certainly do nothing without a guarantee, and that this will be granted is perhaps not very probable, there being no inducement whatever to Government or the Secretary of State to enter into any such arrangement. Were however the Company to give up their contemplated operations in Bellary altogether, it seems doubtful whether Government would be prepared to take up either project, seeing that no revision would be likely to reduce the amount of either estimate below one million sterling, and, under the most favourable circumstances, it would be many years before the bare interest on the outlay could be covered.

7. Investigations carried on by many officers during many years have shown conclusively that water cannot be carried to, or near to, Bellary, by gravitation, except at a great cost, and that unusual difficulties lie in the way of turning the Toombuddra waters to account for the irrigation of any considerable area of land in that district. Little more, if indeed anything material, can be added to the information on this point, and so far as engineering considerations are concerned, the data for a decision for or against any such project are fairly complete. If the Government are really desirous of carrying out either scheme, and think that the good that would result would be worth a considerable risk of a yearly deficit of one or two lacs of rupees, it would be well to move the Secretary of State to get the Madras Irrigation and Canal Company to abandon any claims they may be deemed to have to this field for their enterprise, otherwise there would seem to be no object in asking the Company to take any action in this direction, unless indeed upon

*Proceedings of the Madras Government, Public Works Department,
18th October 1873.*

the general consideration that it is inconvenient to have them occupying, for an indefinite time, ground which otherwise the Government might be able and prepared, at any rate to some small extent, to work upon.

8. In respect of the particular reference from the Municipality of Bellary it would seem to be advisable that its President should be informed that the prospect of a supply of water being brought to or near to the town is so remote as to make it desirable that other sources of supply should be made the most of, and improved as far as may be possible.

(Signed) J. MULLINS, Lieut.-Colonel, R.E.,
Chief Engineer for Irrigation.

CAMP AT OODAMULPETTA,
26th August 1873.

No. 307. ORDER THEREON, 18th October 1873, No. 2,549.

IRRIGATION, No. 26.

ORDERED to be communicated to the President of the Bellary Municipality, whose particular attention is

called to the last paragraph of Lieutenant-Colonel Mullins's clear and conclusive report.

(True Extract.)

Colonel, R.E.,
Secretary to Government.

To the Financial Department.

„ Chief Engineer for Irrigation.

„ St Eugene Bellary

Exd. S. T. Austin.

Spares Copies.

BELLARY COLLECTOR'S OFFICE

No. 43

Dated

26 July

1873

From, President Municipal Commission
THE COLLECTOR OF
BELLARY.

To, The Chief Secretary to Government

Sir, I have the honor to forward copy of a letter No. 175 dated the 28th May, from the President Municipal Commission, Bellary, on the subject of the excavation of a channel from the Tungabhadra river to the town of Bellary.

2 Although this is the first time the Commission have urged the matter, for the sake of obtaining a supply of water for the town itself, the proposal to excavate such a channel is not a new one. The following is an abstract of the correspondence on the subject.

3 In L.O. Public Works Department, No. 2773, dated the 26th September 1863, the importance of the subject was duly recognized, but Captain Fischer, in the letter embodied in the order, expressly stated, that the canal, if made, would not come in the direction of Bellary itself, but far to the north of it. He further stated "To supply the Cantonment of Bellary with water from the Tungabhadra would necessitate the alteration of the canal's inclination to such an extent as to make its capacity for carrying water for irrigation as well impracticable: three or four times the quantity of work would have to be done: but on this subject, I have already submitted a project to Government."

4 In L.O. Public Works Department, No. 184, dated the 15th January 1864, the Government remarked that as regards the irrigation of the plains surrounding Bellary, the Govern-

ment believes that it is from Ballabhapuram and alone that a channel can be led for that purpose, but the survey of the country and the difficulties that have been already pointed, show such vast, if not insuperable, physical difficulties to exist, as to satisfy the Government that the work is of greater magnitude than can at present be undertaken by the State.

5. Ld. Public Works Department No 2606, dated 20th August 1866, runs as follows: "The Government are well aware that the only certain and effectual mode of supplying the means of irrigation to the plains of Bellary is the construction of a sufficiently capacious canal from the Tonnabudra at or near Wallabhapuram; but this project, though originally investigated by members of the Department of Public Works with a view to its being undertaken by the Government, forms a part of the Tonnabudra project, referred to in the preamble of the Madras Irrigation and Canal Company's Contract, and is held in abeyance pending the completion of the works which the Company have in hand below Kurnool."

The present state of Bellary, however, shows that no more time can with safety to the District be lost in carrying out some salutary scheme for the improvement of the irrigation, and as the only one likely to be successful is that of the Tonnabudra canal from Wallabhapuram, an appeal will at once be made to the Secretary of State to call upon the Company to begin that part of their enterprise which consists of the conveyance of water for irrigation from the Tonnabudra to Bellary by means of a canal from Wallabhapuram, or upon their inability to do, at once to authorize the canal being undertaken by this Government.

6. In September 1866 the prospects of the district were so unfavorable, that the Collector, to give employment to the starving people, urged the commencement of the line which had been selected for the sixth section of the Madras Irrigation and Canal Company's proposed canal from the Tonnabudra at Wallabhapuram to Bellary, as however

this

this could not be done without a reference to the Agent & by him to his Board and till an understanding had been come to between the Company and the Secretary of State, the Government, in their order Public Works Department, No 2879, dated the 10th September 1866, declined to sanction it.

7. In March 1867, the Collector made a report upon the Irrigation requirements of the district, urging again the advantages of commencing the Tonnabudra project. The Board of Revenue strongly supported him. The Government in their order, Revenue Department, No 734, dated the 28th March 1867 remark "The practicability of the Tonnabudra project has yet to be established, and while it forms part of the Irrigation Company's scheme and must be left to them, if they are prepared to undertake it, its execution appears likely, from the Consulting Engineer's report, to occupy much more than five years as estimated by the Collector."

8. A long report upon the line to be taken by the Canal was submitted to Government by the Consulting Engineer, Irrigation and Canal Company, on the 30th January 1867. The adoption of this line would have brought water into Bellary itself. Upon this latter Government passed orders in their Proceedings, Public Works Department, No 518, dated 21st February 1867, but giving no definite decision. Since then no final order in the subject appears to have been received in this office.

I have the honor to be,

Sir,

Your most obedient servant

R. Master

Collector & President M.C.

No. 33A.

Note by the Chief Engineer for Irrigation
Water for the Town of Bellary from
the Ponnudra, if supplied by gra-
vitation, must be brought from
Walavapoor or its neighbourhood.
A scheme for a canal from this
point has been investigated by
the M. S. Naval Company, and
its details are given in the
papers printed in P.M. G. N.
518 of the 27 February 1867. A
few months afterwards in the
same year the line of this
canal was inspected by Lord
Napier, who was accompanied
by the then Secretary in the
P.M. D., as also by the Officer
who had investigated the project.
Mr. Gordon, and the general re-
sult was that the tunnels un-
der the Kellapoor summit &
through the hills of rock in
the margin of the Daroos
Tank were considered to present
such difficulties in the way
of

BELLARY COLLECTOR'S OFFICE

Dated 26 Feb 1873 No. 43

To,
The Collector Bellary

Is forwarded to
No. 1340. Secy.

Enclosure 1

Received
26 Feb 1873
Notarized

In connection with the
scheme for a canal from
the Ponnudra to the
Bellary on the subject
of the preservation of a
channel from the
Kellapoor summit
to the Town of Bellary
to supply the town

29 Feb 1873
J. H. Gordon
Chapman

of estimating the probable cost of the work, as to make it desirable to seek an alternative line, although it was known that the latter would not command the Town of Bellary.

2. Consequently a low level line for this, which has been termed the upper Bellary project was carefully investigated by Mr Gordon, and was reported on to Government by the then Consulting Engineer in a letter N^o 120 dated 11th ^{Ce 1339} 1870.

January 1870, while an illustrative map was submitted on the 14th February following, with letter N^o 136. In these communications no orders appear to have been passed, but I may remark that though this low level line needs no tunnels, & much of its length of 83 miles runs through easy country, it presents difficulties quite as, if not more formidable than those of the high level line.

line from Malavapora. I have no copies of the plans & forwarded by the Consulting Engineer, but the following particulars taken from his letter N^o 120, indicate what costly work would be necessary. In the same section, $6\frac{1}{2}$ miles in length, there are seven walls required, the greatest depth of water to be retained being 90 feet and the least 58 feet; this probably refers to the depth at the lowest ground crossed by each wall.

6 miles long. In the 3rd section there are the Sumapora cutting 800 yards long and $43\frac{1}{2}$ feet deep at the summit; another cutting 64 feet deep; another 1900 yards long and $40\frac{1}{2}$ feet deep. Also $1\frac{1}{2}$ miles of wall altogether, the greatest depth of water against which would be $59\frac{1}{2}$ feet and the lowest $48\frac{1}{2}$ feet. The works for crossing the drainage of

of the country are likewise very heavy.

3. The cost of the high level line from Malavapora was estimated at

for a perennial supply Rupees 143,88,000
— water for a single crop — 116,70,500

and the area to be irrigated being 150 thousand acres, the outlay per acre would be in the case 95.9 and in the other 77.8

Rupees per acre. Similarly the cost of the low level line from Hoopoor has been estimated

at Rupees 165,24,640 including storage for a second crop, while without storage it would be

about 128 lacs and the area for which a supply would be carried being 2,12,500 acres,

the cost per acre would be 77.9 and 60 Rupees, according to whether storage were provided or not.

The estimated net returns from the high level project with storage were 10.88 per cent but further experience inclines me to believe

believe that the area of the 2nd crop will never be two-thirds that of the principal crop, & that consequently these returns are somewhat overestimated. The net returns from the same project without reservoirs were considered likely to amount to 8.42 per cent.

For the Hoopoor low level project the net returns were calculated to amount to

10.80 per cent with reservoirs and
8.00 do nearly without storage

4. It must here however be noticed that in calculating the returns of the two projects different data were used, as follows,

	High level	Low level
Water rate 1 st crop	8½	6
do 2 crop	6½	6
Charges per cent on cost of construction	2½	2

and, adjusting the former to the latter to allow of comparison, the following general results

results are shown:

	Cost		Area of Irrigation acres	Net returns	
	With	Without		With	Without
	Storage			Storage	
	Rupus	Rupus		per cent	per cent
High level project from Walavapoor	14,388,000	11,670,500	150,000	8.42	5.71
Low level do from Hoosoor	16,524,640	12,800,000	212,500	10.80	8.00

5. For all practical purposes it may, I think, be assumed that a project including extensive storage works is not very likely to be carried out, seeing how difficult it is to find suitable sites for reservoirs, while such as have been found are in foreign territory. It has then to be considered whether there is any probability of either of these large projects, omitting storage, being carried out either by the Madras Irrigation Canal Company, or by Government.

6. The Company will certainly do nothing without a guarantee, and that this will be granted is perhaps not very probable, there being

being no inducement whatever to Government or the Secretary of State to enter into any such arrangement. Were however the Company to give up their contemplated operations in Bellary altogether, it seems doubtful whether Government would be prepared to take up either project, seeing that no revision would be likely to reduce the amount of either estimate below 1 million sterling, and under the most favourable circumstances it would be many years before the bare interest on the outlay could be covered.

7. Investigations carried on by many officers during many years have shown conclusively that water cannot be carried to, or near to, Bellary, by gravitation, except at a great cost

cost, and that unusual difficulties lie in the way of turning the Pombudra waters to account for the irrigation of any considerable area of land in that District. Little more, if indeed anything material, can be added to the information on this point, and so far as Engineering considerations are concerned the data for a decision for or against any such project are fairly complete. If the Government are really desirous of carrying out either scheme, and think that the good that would result would be worth a considerable risk of a yearly deficit of 1 or 2 lacs of Rupees, it would be well to move the Secretary of State to get the Madras Irrigation Canal Company to abandon any claims they may be deemed to

19
to have to this field for their enterprise, otherwise there would seem to be no object in asking the Company to take any action in this direction, unless ^{consideration} indeed upon the general ground that it is inconvenient to have them occupying, for an indefinite time, ground which otherwise the Government might be able and prepared, at any rate to some small extent, to work upon.

8. In respect of the particular reference from the Municipality of Bellary, it would seem to be advisable that its President should be informed that the prospect of a supply of water being brought to or near to the Town is so remote as to make it desirable that

that other sources of supply
should be made the most
of and improved as far
as may be possible

Camp Odumalpetta ^{Chinnellins} S.H.O.K.

26 August 1873

Chief for Irrigation

The Secretary to Govt P.H.D.

Sept 17 1873
From
The Chief Engineer for
Irrigation

To
The Secretary to
Government
P. M. D.

Dated 26th August
Sept 2nd September } 1873
Recd 3rd do }

No. 33 A.

Note on the subject
of excavating a channel
from the Tambudra
river to the town of
Bellary.

With Order

Per
28-10-83

Ordered the Commissioner of the District
of Bellary to cause the
particular attention to be
paid to the
last part of the statement
of the
No. 2549.

To the Hon. Secy to Govt
of the Madras Presidency
29/10/73

7-30-30
6-30-30
25/10/73