

(1) File No. 2

(2) Date of receipt 25-7-20

3. Initials of the officer

MADRAS RECORD OFFICE

Government of Madras.

Public Works DEPARTMENT.

G.O. No.	3409	P.W.D.	Press
Dated	10.12.1920	18.68	

Not to be folded or roughly handled

Read the following papers —

No. 634. From the President of the Municipal Commission, Madras, to the Secretary to Government, Public Works Department, dated Madras, 22nd August 1868, No. 727.

1 I have the honor to forward, for submission to the Right Honorable the Governor in Council, Proceedings of a Special Meeting of the Municipal Commissioners held on the 20th instant for the purpose of considering and discussing the report of the Committee on the Water Works Project of Madras, and which report was unanimously adopted, as per following Resolution —

“That the report of the Committee on the Water Works Project for Madras be adopted and submitted to Government for their favorable consideration.”

2. I forward, herewith, the four original plans, (requested to be returned,) together with the Executive Engineer's estimates in detail

3. I also forward a bound-up copy of the report of the Committee, together with the two plans proposed by the Executive Engineer Mr. Lee.

4 I would venture to ask for an early consideration of this report, as it is very desirable that, if sanctioned by Government, no time be lost in making arrangements for the supply of material from Home, and the Commissioners are contemplating asking Mr. Burton Wright, who proceeds to England by next Steamer, to act as their Agent at Home.

No. 635. MINUTE BY HIS EXCELLENCY THE PRESIDENT.

1. The scheme submitted by the Municipal Commission for the delivery and distribution of water in Madras is one which has strong claims on the favorable consideration and the advocacy of Government. It has the recommendations of simplicity, comparative cheapness, and adaptation to local circumstances. It is popular and national in its character. It aims at doing the greatest amount of good at the least possible cost. It consults the interests and habits of the Native poor. It imposes no intolerable charge on the rich. It can be carried out without a new tax or rate. In its general features it is framed on a model which has succeeded elsewhere.

2 In adopting the principle of distribution by gravitation, the Municipal Commission has escaped the formidable expenditure which would be entailed by the use of steam-power in raising the water and delivering it under artificial pressure. They have, however, gained this advantage at a sacrifice of quantity. The water must be drawn from the Red Hills reservoir at a level six feet above that which was originally contemplated; instead of forty millions of cubic yards only thirty-two millions will be available for the use of the town, and fifteen and a half millions of cubic yards are rendered useless for the purposes of irrigation, by which the Government incur a serious prejudice.

3. Balancing the advantages of the project against the disadvantages, I find that the former greatly preponderate, and I advise that the project be adopted by Government, with this condition, however, that the just expectations of Government,

with reference to the returns to be derived from the combined scheme of irrigation and water-supply, be secured. It was on the declaration of this Government that the scheme would be a profitable one, and on the data supplied in support of that opinion, that the Government of India advanced the funds which are being expended on the supply channels and the storage basins. This Government must leave nothing undone to redeem engagements offered and accepted in good faith.

4. The combined scheme of irrigation and water-supply cannot be termed profitable or re-productive, unless it yields at least seven per cent on the capital expended—five per cent for interest, and two per cent for repairs, management, and other incidental charges. The outlay contemplated by Government for their part of the work will certainly not be less than eight lakhs, and the minimum interest, which they could accept, would be Rupees 56,000 per annum. How is this sum to be obtained? Subtracting thirty-two millions of cubic yards for the water-supply of the city, and fifteen millions of cubic yards sacrificed as above stated, there will remain available for the purposes of irrigation, in addition to the quantity now used, a surplus supply of fifty-three millions of cubic yards. Allowing 7,000 cubic yards for the irrigation of an acre of land, and assuming 7 Rupees as the water-rate, the surplus supply of fifty-three millions will yield Rupees 53,000 per annum, still leaving a deficit of Rupees 3,000 to be provided from some other source. This deficit can only be covered by charging the Municipality for the water supplied to the town, and it is conformable to our previous declarations that the price should be the price yielded by irrigation. Thirty-two millions of cubic yards applied to irrigation would return Rs. 32,000 at the rates indicated above. It would not be consistent to accept less from the town. As the Municipality, by adopting the economical system of distribution by gravitation, have deprived Government of fifteen millions of cubic yards of water, which will now lie idle in the tank, owing to the high level at which the town supply will be taken off, it would be strictly equitable that the Government should charge the Municipality for this amount also. I do not, however, propose that this should be done. I would charge the Municipality for what they get, not for what is lost for their convenience. I trust that the Supreme Government, taking into consideration the new charges to which the town will become liable for the distribution part of the scheme, will not enforce their rights to payment for water to the uttermost. The project is not simply a remunerative irrigation work. It is one of great importance to public health and public convenience. The Government of India will probably be inclined to sanction an abatement, which will still leave us in the enjoyment of a reasonable rate of interest, more than seven per cent, upon the outlay of the State.

5. I need scarcely observe, that the present scheme, if it were simply an irrigational work, would be amply remunerative. As such, 100 millions of cubic yards of water would be available, which would yield a return of Rupees 1,00,000 on an outlay of eight lakhs, or twelve and a half per cent.

6. I may here remark, that I do not think that the retention of fifteen millions of cubic yards in the lake, in consequence of the high level at which the town supply will be drawn off, is in all respects to be regretted. The reserve of a large body of water in the reservoir will conduce to its purity, and the basin being

well filled at all seasons of the year will be an ornament to the landscape, and a permanent source of recreation and salubrity, instead of being for several months a swamp, as it is at present.

7. The Government should, in my opinion, forward the scheme for municipal water-supply to the Supreme Government, with a recommendation that the Supreme Government shall advance the sum of Rupees 12,80,000 to the Municipality of Madras as a loan, bearing interest at six per cent—four per cent as current interest, and two per cent as sinking fund for the extinction of the capital debt, such being, as I understand, the terms on which money is being advanced for the same purpose to the town of Calcutta—the Municipality of Madras engaging to pay to Government 7 Rupees per annum for 7,000 cubic yards of water furnished, and the Government of Madras recognising a prior claim on the part of the Municipality to thirty-two millions of cubic yards per annum.

8. I would recommend, at the same time, that the Government should order surveys to be made of the hills in which the head-waters of the Cortilliar river have their sources, with the view of discovering convenient sites for additional storage basins. There cannot be the slightest doubt of the sufficiency of the Cholavaram and Red Hills tanks in all seasons except those of the most exceptional dryness, but such a season did occur in the early part of the present year. The Government ought to be prepared for the worst, and an additional reserve of water might be serviceable not only to guard against the danger of a defective rain-fall, but also to provide for an increasing demand on the part of the city, and for a larger area of wet cultivation. In fact, with an increased water-supply available for the purposes of irrigation, the returns from that source alone might eventually become so considerable that the Municipality might receive the portion requisite for its wants gratuitously.

October 1868.

(Signed) NAPIER.

No. 636. MINUTE BY THE HONORABLE H. D. PHILLIPS.

1. I concur with His Lordship, the President, as to the propriety of submitting this subject to the Government of India, with a request that the sum which the Municipality are likely to expend (Rupees 12,80,000), in carrying into execution Mr. S. Lee's plans, be advanced as a loan at six per cent. I concur, also, in the other proposals made by His Lordship.

2. I think, however, it is desirable to lower the charge for water to Rupees 6 the acre, assuming 10,000 cubic yards to be the average quantity required for that extent of land. We have already settled that this shall be the rate at which the Kurnool Canal and Irrigation Company are to supply water to the Government ryots in that district. Further, it is the rate at which water is now charged in the two delta districts.

3. It has been assumed, I observe, that the value of water near the Presidency town should equitably be higher than in the outlying provinces. When, however, it is borne in mind, that the present project, however designated, is not a purely

irrigation project, and that it was revived mainly with a view to supplying water to the town of Madras, and to improve its sanitary condition, some small profits by legitimate irrigation being brought to bear on the question as a secondary matter, and to give to it, as a whole, a more presentable character when transmitted to the Supreme authorities, there will be no inconsistency in adhering to a water-rate which already prevails in three important districts.

5th October 1868.

(Signed) H. D. PHILLIPS.

No. 637. MINUTE BY THE HONORABLE A. J. ARBUTHNOT.

I concur in the Governor's views.

17th October 1868.

(Signed) A. J. ARBUTHNOT.

No. 638. ORDER THEREON, 30th October 1868, No. 3,409.

IRRIGATION, No. 30.

1. The Government fully approve of the project submitted with these papers for bringing water from the Red Hill Lake for the supply of the most important and populous parts of Madras, and they resolve, in laying it before the Government of India, to recommend the advance of a loan of Rupees 12,80,000 to the Municipality of Madras as the estimated cost of the undertaking, on the condition of that body engaging to pay interest at six per cent. per annum, of which two per cent. shall be carried to the credit of a Sinking Fund, in addition to a charge for the quantity of water they may appropriate at the rate of Rupees 7 per 7,000 cubic yards, the Government recognising a prior claim on the part of the Municipality to thirty-two millions of cubic yards per annum.

2. Measures will be taken to ascertain whether conveniently situated sites exist within the upper portions of the catchment basins of the Coritilliar and its affluents for the construction of additional reservoirs. Though satisfied of the sufficiency of the supply in the Cholaveram and Red Hill tanks, His Excellency in Council considers it important to provide against seasons of exceptional dryness, such as that which occurred in the early part of this year. An additional reserve of water will not only be of service in years of defective rain-fall, but will serve to meet an increased demand for the use of Madras, or for extension of irrigation in its neighbourhood.

(Signed) CHARLES A. ORR, Colonel, R. E.,
Secretary to Government.

No. 639. From the Secretary to the Government of Fort Saint George, Public Works Department, Secretary to the Government of India, dated 30th October 1868, No. 3,410.

SIR,

IRRIGATION, No. 31.

1. In the project for supplying Madras with water from the Red Hill Lake, as prepared by Mr. Fraser, provision is made for conveying the water in an open delivery channel only as far as

the Spur Tank, where, after being filtered, it was intended that it should be raised by steam power to the necessary height to secure its delivery throughout Madras under pressure.

2. As this system of distribution and delivery would necessitate a large outlay of capital, in the first instance, on the construction of capacious settling and filtering beds, and on the erection of powerful pumping engines, and would entail heavy annual working and maintenance charges, the Municipal Commissioners, keeping in view the circumstances and habits of the great mass of the persons by whom a plentiful supply of good water is most needed, as well as the limited resources at the disposal of the Commission, have thought it necessary to reconsider the subject, and having referred it to a Committee of its Members, the result is that, abandoning the idea of effecting a street delivery under pressure obtained by pumping, they have adopted a proposal to bring the water from the Red Hills in an open conduit to a spot in the immediate neighbourhood of Madras, and from thence to conduct it through cast-iron mains and distribution pipes to certain points, where it will be delivered from fountains or dip-wells placed in positions conveniently situated for the supply of the several populous districts comprised within the limits of the city.

3. The manner in which this is to be effected is clearly and fully described in the accompanying reports by the Executive Engineer attached to the Municipal Commission, and by the Committee nominated by that body to consider the subject. The water will be taken off from the Red Hill Tank at a level of 31.31 feet above mean tide, and will be carried in an open embanked channel for a distance of about six miles to a point within municipal limits, and will be there discharged into a masonry shaft of such elevation as will give a command over mean sea level of 29.31 feet, which is found to be the least head under which sufficient pressure can be obtained to secure the delivery of the water, even in the simple manner now proposed, at many of the most important and populous parts of Madras.

4. To obtain this command of level, however, it is necessary to tap the Red Hill Tank six feet higher than was intended, and as, in this respect, the proposed scheme of delivery differs from that originally designed, and affects the interests of the Government, I am to explain that though by the change of level at which the supply of Madras will be taken off, the large quantity of water contained in the Red Hill Tank between the levels of 25.31 and 31.31, (estimated to amount to fifteen millions of cubic yards) will require to be permanently retained, and thereby be lost to irrigational purposes, the Government do not consider the circumstance altogether to be regretted, as the retention of a large body of water in the reservoir will conduce to its purity, and prevent its site becoming an insalubrious swamp for several months of the year as it is at present.

5. In all other respects the scheme appears to this Government to be unexceptionable. It is modelled on a system of delivery in successful operation at Pondicherry; it has the recommendation of simplicity, cheapness, and complete adaptation to local circumstances; and is consistent with the established usages of the people. While thoroughly practical in its character, it is designed to supply a great want at the least possible expenditure, and it can be carried out without the necessity of imposing any burden upon the poor, or of taxing the rich. It is, therefore, in the opinion of this Government, peculiarly suitable to the conditions under

which alone it is possible to provide so scattered and so poor a population as that of Madras with a sufficiently abundant and wholesome supply of water, and His Excellency the Governor in Council has accordingly had no hesitation in giving it his fullest approval.

6. As it appears, however, that, even by diminishing the demand for the supply of Madras from forty to thirty-two millions of cubic yards, the Municipal Commissioners' scheme entails the sacrifice of a large quantity of water that might otherwise have been available for a remunerative purpose, His Excellency in Council would recognise the equity of requiring the water thus lost to be paid for at the amount it would yield if applied to irrigation, but for the consideration that the undertaking to supply Madras with water is one which cannot be looked at solely from a remunerative point of view, but must be regarded in the light of a great and important sanitary improvement, affecting not only the convenience but the health of a large population. For this reason, and seeing that the scanty revenues of the town, already scarcely adequate to meet the calls upon them, will have to bear additional charges for the cost of the distribution works, this Government, I am desired to say, trust that His Excellency the Governor General in Council will see fit to waive the claim.

7. Estimating at eight lakhs of Rupees the probable cost of enlarging and better supplying the reservoirs at Sholaveram and the Red Hills from which the water to Madras is to be obtained, and assuming that seven per cent. will, under the circumstances, be a fair return, the outlay on the part of Government will, it is believed, be sufficiently covered by a revenue of Rupees 56,000.

8. The capacity of the two tanks above the level of the supply channel to Madras being 138 millions of cubic yards, it is now proposed to allot thirty-eight millions, nearly as at present, to existing cultivation, and thirty-two millions for the supply of Madras, leaving, exclusive of the quantity permanently retained in the tank, fifty-three millions of cubic yards for extension of irrigation. Taking 7,000 cubic yards as the quantity required for maturing a crop on an acre, and 7 Rupees as the water rate per acre, those fifty-three millions of cubic yards will yield a return of Rupees 53,000.

9. If then a proportionate charge be made for the thirty-two millions of cubic yards appropriated to the supply of Madras, an additional sum of Rupees 32,000 will be obtained. The gross returns will then be raised to Rupees 85,000, and as this, in the opinion of His Excellency the Governor in Council, ought amply to satisfy the requirements of Government, I am directed to submit the scheme for the favorable consideration of the Government of India, with the strong recommendation of this Government that the price to be paid by the Municipality for the water they take may be regulated at the rate of 7 Rupees for 7,000 cubic yards; and, in inviting attention to the accompanying Minutes by His Lordship the President and the Members of Government, I am desired to request that, in conformity with the terms on which it is understood that money has been advanced for a like purpose to the Municipality of Calcutta, His Excellency the Governor General in Council will sanction the advance of a loan of Rupees 12,80,000 to the Municipality of Madras as the estimated cost of the project, and bearing an interest of six per cent. per annum, of which two per cent. will be carried to the credit of a Sinking Fund.

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3. I also forward a bound-up copy of the report of the Committee, together with the two plans proposed by the Executive Engineer Mr. Lee.

4. I would venture to ask for an early consideration of this report, as it is very desirable that, if sanctioned by Government, no time be lost in making arrangements for the supply of material from Home, and the Commissioners are contemplating asking Mr. Barton Wright, who proceeds to England by next Steamer, to act as their Agent at Home.

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(Here enter October 1868)

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2. Measures will be taken to ascertain whether conveniently situated sites exist within the upper portions of the catchment basins of the Cortilliar and its affluents for the construction of additional reservoirs. Though satisfied of the

Court of 1868 Madras.

PUBLIC WORKS.

To

THE PRESIDENT OF THE MUNICIPAL
COMMISSION, MADRAS
&c, &c, &c

Dated October, 30th

Recd

Encl

G O, 30th October 1868, No 3,409

OCTOBER.

Nos. 634-638

Mahes Water Supply Project - Passing
orders on papers relative to the —.

Minute by His Excellency the President.

1. The scheme submitted by the Municipal Commission for the delivery and distribution of water in Madras is one which has strong claims on the favorable consideration and the advocacy of government. It has the recommendations of simplicity comparative cheapness and adaptation to local circumstances. It is popular and rational in its character. It aims at doing the greatest amount of good at the least possible cost. It consults the interests and habits of the native poor. It imposes no intolerable charge on the rich. It can be carried out without a new tax or rate. In its general features it is framed on a model which has succeeded elsewhere. —

2. In adopting the ~~adapting~~ ~~the~~

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the Municipal Commission has escaped
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I find that the former greatly

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~~in~~ ^{in support of that opinion} that the government of India advanced
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4. The combined scheme of irrigation
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fields at least seven percent on the
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The outlay contemplated by Government
for their part of the work will certainly
not be less than eight lakhs and the
minimum interest which they could
accept would be Rs. 56,000. per
annum. How is this sum to be obtained?

Subtracting 32. millions of cubic yards
for the water supply of the city, and
15. millions ^{consumed as above stated} of cubic yards, there will
remain available for the purpose of
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now used a surplus supply of 53.
millions of ^{cubic} yards. ^{7,000} allowing 10,000.
cubic yards for the irrigation of an
acre of land and assuming 7 Rupees
as the water rate the surplus
supply of 53. millions will yield

^{53,000} Rs. 37,100. per annum leaving
a deficit of ^{3,000} Rs. 18,900. to be provided

from some other source. This deficit can
 only be covered by charging the Municipality
 for the water supplied to the town
~~approximately~~ at the price yielded by
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 Rs. ^{32,000} 22,400. at the rates indicated above.
 It would not be safe to accept help
 from the Govt. As the Municipality
 by adopting the economical system
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 Government of 15 millions of cubic
 yards of water which will now lie
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 level at which the town supply will
 be taken off it would be ^{highly} equitable
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 the Municipality for this amount also.
 I don't, however, propose that this
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 Municipality for what they get not
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I trust that the Supreme Govt taking into consideration the ^{new} ~~heavy~~ charges to which the Govt will become liable for the distribution part of the scheme will not enforce their rights to payment for water to the uttermost. The project is not simply a remunerative irrigation work. It is one of great importance to public health and public convenience. The Government of India will probably be inclined to sanction an statement which will still lean in the enjoyment of a reasonable rate of interest 7 per cent upon the outlay of the State.

5. I need scarcely observe that the present scheme if it ^{were} ~~were~~ simply an irrigational work would be amply remunerative. As such 100 millions of cubic yards of

water would be available which would yield a return of Rs. 70,000 on an outlay of 8 lakhs or nearly ^{12½} ~~12~~ per cent.

6. I may here remark that I don't think that the retention of 15 million of cubi yards ~~retention~~ in the Lake by the ^{in consequence of} high level at which the Town supply is drawn off, is in all respects to be regretted. The ^{reservoir} ~~retention~~ of a large body of water in the reservoir will conduce to its purity and ~~it will~~ the basin being well filled at all seasons of the year will be an ornament to the landscape and a ^{permanent} ~~source~~ of recreation and salubrity instead of being for several months a swamp as it is at present.

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Supply to the Supreme Government with
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The Municipality of Madras engaging
to pay to Government 7. rupees per acre
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9
275
Should order surveys to be made of
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295 11
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Napier

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N. J. Armstrong

17th Feb 1888

11-4-95

27/1068 Dept.
N^o 4098.

Minutes

by the Right Honorable
the President
and

The Honorable Members.

Sept 1st }
Sept 23rd } Oct/68.

Regarding
the scheme submitted
by the Municipal Com-
missioners for the
delivery and distribution
of Water in Madras.

N^o 635 & 637

N^o 3469-30th October 1868

18727

385
Municipal Commissioners' Office,
MADRAS, 22nd August 1868.

The Secretary to Government
Public Works Department.

Sir,
I have the honor to forward
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Yours truly
James H. Lee
Com. of the Lee

Charles Deverson President
of the Municipal Commission

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11-4-95

20th 1878
Municipal Corp.
No. 3232

There.

The President

of the
Municipal Corp.
- resolution

At 22.00 } August 1878
Dec. 24 1878

Encl: 8 No 127

Submitting
the Committee, &c.

- for the the various
Water Works project
and, suggesting that
early orders may
be passed upon
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to the 20th 1878

o. b. h. 12

29th Aug 1878

47E
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transmitted to the Supreme authority.
Then, there will be no inconsistency
in adhering to a water rate which
already prevails in three important
districts.

5 Oct 68

W. H. N.

11-4-95

P. M. 1868 V. M. T.
No. 4077

Minute

By the Honorable H. D. P. M. T.

St. 5' }
Red 23' } J. A. 687.

USE

Regarding the
scheme submitted by
the Municipal Commis-
sioners for the delivery
and distribution of
Water in Madras

42636

42636-30. October 1st.

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as far as the Spur Lane
where, after being filtered, it
was intended that it should
be raised by steam power
to the necessary height to be
delivered through
pipes under pressure.

In this system of
delivery would necessitate
a large outlay of capital

in

in the first instance, and
 a heavy annual charge,
 the Municipal Commissioners,
 keeping in view the cir-
 cumstances and habits of
 the great mass of the persons
 by whom a plentiful sup-
 ply of good water is most
 needed, as well as the li-
 mited resources at the
 disposal of the Commission,
 have thought it necessary
 to reconsider the subject,
 and having referred it to a
 Committee, the result is
 that, abandoning the idea
 of effecting a direct delivery
 under pressure, they have
 adopted a proposal to
 bring the water from the
 Red Hills in an open con-
 duct to a spot in the

Handwritten notes in the top left margin, partially illegible.

Handwritten notes in the middle left margin, partially illegible.

immediate neighbourhood
 of Madras, and from thence
 is conducted through cast
 iron mains and distribution
 pipes to certain points where
 it will be delivered from
 cisterns or high wells.
 placed in positions con-
 veniently situated for the
 supply of Black Town, Chos-
 tan, Telang, Perambetoor,
 Persewank, Chinnadrajett,
 Karaikalpooram, Trilli-
 cone and St. Thomas.

To secure sufficient
 pressure for this, however, it
 is necessary that the sup-
 ply Channel to Madras
 should leave the Red Hill
 Lake at a level 5 feet
 higher than has been in-
 tended, and that it should
 be

he made with as main a
slope is possible. This, in
the Spur can't be retained
as the spot from which
the distribution should
commence, would neces-
sitate the banks of the
Tank being raised 2.50 feet,
and the water being conveyed
into it between lofty em-
bankments. Under such
circumstances the surface
of the water in the Tank,
and in the channels for
some distance back,
would be raised so high
as likely to become a
cause of dampness to the
adjoining houses, and
perhaps a source of dan-
ger to the neighbourhood.
While the almost stag-
nant state of the water

would

It has been merely
a matter of time
pending, when the
the junction from
the water supply
will be a direct supply.

would certainly not tend to
improve its purity. For
these reasons, and because a
main, conduit is already pro-
videable owing to its great
expense (and its liability to
obstruction for the purpose of plants
for the purpose of it is pro-
posed to form the supply
channel on an embankment,
and instead of terminating
it in the Spur Tank, to lead
it, on the highest level that
it can be made to follow,
to a point within Municipal
limits from whence the dis-
tribution works may most
advantageously be com-
menced: that point is
Godmundham close to
the site of the New Lunatic
Asylum in Locock's gar-
den.

Assuming that

the

the expense of pumping
the requisite quantity of
water to a height to secure
its delivery under pressure
manifestly renders that
system of distribution im-
possible to an extensive
population so widely dis-
persed and so poor as that
of Madras, the plan de-
signed by Mr Lee and ap-
proved by the Municipal
Commissioners, appears
to be the best and the most
feasible that can be
adopted. It provides for
leading off a channel of
suitable dimensions from
the Red Hill Lake at a level
of 31.31 feet above mean
tide, and carrying it, by
means of an embankment,
with such a fall as will

give

635
give a command over mean
sea level of 29.31 at the point
where the distribution works
will be commenced, and where
the water will be discharged
from the Channel into a main
convey shaft. The trunk main
of ⁴⁰ ~~40~~ ^{feet} in diameter will
thence start, and after being
carried some distance, will
give off the branch mains,
leading to the ^{several} ~~various~~ points
from which service pipes
will convey the water to the
various fountains and
discharge or stand pipes
which are to be placed in
suitable localities.

This scheme is esti-
mated to cost 12,80,000 Rs,
deducting Rs: 30,832 which
will be provided by the
Red Hill Retainers in lieu
of the Supply Channel

to

to the Spur Bank. There
are no engineering dif-
ficulties in the way
of its execution, and
every care seems to have
been taken to provide
against all contingencies.

The estimates appear to be
drawn up with remark-
able care, and to be cal-
culated on bases that
might be proved amply
sufficient.

The provisions for
the scheme are

I. The water to
be taken at the
level of the old canal
instead of the lower.

II. The water to
be taken that will probably

take

like place in the
handling the arrange-
ments for the discharge
of water into tanks.

It is with
out the possible power
the water in the Red Hill.
The water level of
the lake is the level of
the lake channel to
be drawn without cutting off
the water supply, the
water in the water contain-
ed in the lake below
the level of the crest of
the old dam will
not be available either
for irrigation or any
other remunerative
purpose. That water
is

is estimated at $20\frac{1}{2}$
million cubic yards,
but as Mr. Fraser pro-
posed to place the side
of the proposed channel
1 foot below the crest of the
Calingulah, $5\frac{1}{2}$ millions
would under his design
have been lost, and the
difference now of 15 millions
is the quantity that must
be sacrificed in the
Municipal Commis-
sioners' scheme be accept-
ed. It seems clear
that no plan of distribu-
tion and delivery by an
open conduit leading to
Cast iron mains can be
made to meet the requirements
of Madras unless the for-
mer start from a
sufficiently high level
at

is contemplated
{?} as an water
rate N?

533
at the Red Hills, and it is
satisfactorily known that
the level of the old Calingul-
ah is as low as will suf-
fice to give the necessary
command.

The value of 15 mil-
lions of cubic yards of water
may be estimated at Rs. 9000,
taking 1000 cubic yards as
the maximum quantity
required for the irrigation of
an acre of land with Rs. 60
the water rate thereon, and it
is for the government to
determine whether they can
cover this amount of pro-
bable revenue, and whether
the Municipal scheme, which
does not seem to contemplate
any payment for the 32
million cubic yards which
it is proposed to take for
the supply of Madras, can
be recommended, seeing
that

that the Red Hill project
is being carried out as a pe-
nitrative work from
borrowed monies, and that
in seeking sanction for
it, the Government as-
sured the Government of
India that the charge to
be made for water de-
livered to Madras would
largely supplement the
returns expected to be
derived from irrigation

Vide para 5 of letter,
Govt. of India dat
130 April '11, p. 137

Orders are re-
quested:

[Signature]

to the Municipality of
Madras as the estimated
cost of the undertaking,
on the condition of that
body engaging to pay
interest at 6 per Cent per
annum, of which 2 per
Cent shall be carried to
the credit of a sinking
fund, in addition to
a charge for the quantity
of water they may appro-
priate at the rate of Rs

7 per 1000 Cubic yards, the Govt recognizing a prior
claim on the part of
the Municipality to
thirty two millions of
Cubic yards per annum.
Measures will be
taken to ascertain whether
conveniently situated sites
exist within the upper portions
of the Catchment Basins

of the Corbittiar and its
affluents for the construction
of additional reservoirs, to
~~store water to supplement~~
~~the supply to the Cho-~~
~~laveram & Red Hill~~
Lasseram & Red Hill
Lasseram in years of defective
rain fall, ^{but will serve} ~~and to pro-~~
~~vide for an increased~~
demand for the use of
Madras, or for extension
of irrigation in its neigh-
bourhood.

The satisfaction of the sufficiency
of the supply in the Cholaveram
& Red Hill Tanks. It is an
Council considers it important
to provide against seasons of
exceptional dryness, such as
that which occurred in the
early part of this year. An
additional reserve of water
will not only be of ^{service} ~~use~~

To The President of the
Municipal Commission, Madras
Public Dept. ^{with four plain & two whitened}
Supergrange is done
Chief Eng. for Irrigation
Dec 2 1868
6/11/68

11-4-95

7.7.26 II

11/7/29 BIII

Public Works Dept

Lyo 3409 in d 30.10.1868

Prov. of the Madras
Government. —

Dated 30th Oct. 1868

E. I.

N^o 134 C 638-

Energetic way in which Mr. Lee, the Executive Engineer, has discharged his duty in projecting these works. With out previous training in the