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MADRAS RECORD OFFICE.

Government of Madras.

Local & Municipal DEPARTMENT.

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30TH NOVEMBER 1891, No. 2143 M., LOCAL AND MUNICIPAL.

GOVERNMENT OF MADRAS.

LOCAL AND MUNICIPAL DEPARTMENT.

READ—again the following papers:—

G.O., dated 4th May 1891, No. 671 M., Local and Municipal.

ABSTRACT.—Referring, with remarks, to the Chief Engineer, Public Works Department, for scrutiny, the revised scheme of water-supply for the town of Trichinopoly recommended by the Sanitary Engineer; communicating the papers to the Municipal Council for suggestions as to how the increased initial outlay and working expenses can be met; requesting the Military Department and the South Indian Railway Company to place their shares of the capital cost at the disposal of the Council as soon as possible; and stating that the advisability of introducing a Bill for the enhancement of the maximum rate of taxation on buildings and lands and of the water-tax prescribed in section 47 of Act IV of 1884 will be considered in the Legislative Department.

G.O., dated 24th July 1891, No. 1151 M., Local and Municipal.

ABSTRACT.—Sanctioning, with remark, the scheme of water-supply for the town of Trichinopoly, which is estimated to cost Rs. 4,56,000.

READ—also the following papers:—

From M.R.Ry. S. T. RUNGASWAMI AIYAR, Avargal, B.A., B.L., Rao Bahadur, Chairman, Municipal Council, Trichinopoly, to the Chief Secretary to Government (through the Revenue officer in charge of the Trichinopoly taluk), dated Trichinopoly, 10th August 1891, No. 21.

With reference to paragraph 2 of G.O., No. 671 M., dated 4th May 1891, I have the honour to forward herewith, for the information of Government, an extract from the Proceedings of the Council passed thereon at a special meeting held on the 27th ultimo.

2. The Council take it they are now called upon to suggest ways and means for an extra sum of between Rs. 6,000 to 7,000 over and above the Rs. 28,000 which they had to make provision for by G.O., dated 19th May 1890, No. 808 M. In paragraph 2 of the Government Order under reply, Government has evidently taken the working charges to be borne by the Municipality at Rs. 34,500 *plus* Rs. 5,500 for repairs of pipes, fountains, &c. It will be seen from paragraphs 37 and 39 of Mr. Jones' letter that it is the total working charges that amount to Rs. 34,500, while the share to be borne by the Municipality is only Rs. 21,500. The annual cost of the scheme to the Council will therefore be as worked out below:—

	RS.
Proportion of initial cost to be borne by Municipality	3,58,000
Deduct half grant by Government	1,79,000
	1,79,000
Deduct savings available ..	15,500
What the Council will have to borrow	1,63,500
The yearly sum required to clear off this debt	9,713
Add proportionate working charges	21,500
Add proportionate cost of wear and tear out of Rs. 5,500 which Government has fixed for the purpose in paragraph 2 of its order	3,427
Total ..	34,640

which is Rs. 6,640 more than the original estimate.

3. From G.O., dated 19th May 1890, No. 808 M., it will be seen the Council confessed themselves unable to provide anything beyond Rs. 23,500 out of the Rs. 28,000 required. The yielding power of the municipal revenues fell short of the required amount by Rs. 5,000 and now they have to find an extra sum of Rs. 7,000 (in round figures), in all the Council have to find out Rs. 12,000. The Council believe that without special legislation they would not be able to provide for this sum at all. The last three classes of schedule A of the Act are not at present in operation in this Municipality, and the Council would beg permission to enforce the same. This, however, even in the eye of the most sanguine councillor, cannot yield more than Rs. 2,000 in the year.

4. A majority of the councillors was for reiterating the request about contribution from tolls contained in paragraph 6 of the Chairman's letter quoted in G.O., No. 808 M., dated 19th May 1890. It appeared to them that the chief reason why Government had refused the extra contribution was because Government believed that the scheme was possible without it (*vide* paragraph 5 of G.O., No. 808 M., dated 19th May 1890), and they argued that *now* that the scheme is becoming impracticable without it, perhaps Government might change its view and be pleased to give a favorable hearing to our cause; but the words in which the refusal was couched by Government are so plain and peremptory that they thought better over the matter and concluded there was no alternative left to them in the case.

5. With regard to the raising of the maximum rate of taxation on buildings and lands, the Council beg once more to draw the kind attention of Government to paragraph 6 of the Chairman's letter quoted in G.O., No. 808 M., dated 19th May 1890. The Council now beg to add that the state of things is now no better.

6. The Council are of opinion that, in order to enable them to raise funds, Government should be pleased to allow them to open fresh sources of income. They have ventured upon suggesting certain modifications in the professional tax rates. A good number of residents are drawing salaries under Rs. 200 and they enjoy perfect freedom just now from profession tax calls. The Council are of opinion that it is but just and equitable that they should also contribute towards securing for this town the inestimable benefits of a good water-supply. The rates suggested, everything considered, seem also very fair. Just to take one instance, an artisan or trader making not more than Rs. 40 per mensem has now to pay Rs. 6 to the Municipality, being placed in class V. It is submitted that a person making from Rs. 50 to 100 as holder of an appointment should also be called upon to pay not less than the other, and when the risks which the trader who begins with a capital has to run from adverse seasons and bad debts are considered, the proposal of the Council that the appointment holder should also be taxed will not, it is believed, appear in any way unreasonable. It is expected that this will bring in about Rs. 3,000 in the year.

7. The last source of income which the Council can think of at present is the levying of Octroi duties on certain articles of consumption entering municipal limits. They are very reluctant to take up this ground, especially in view of the G.O., Nos. 1000, 1001 M. of 2nd July 1891, disallowing this kind of taxation. But there is no help for it and the Council could not suggest any other method of taxation which would be so little felt as this. A consumer having to pay Rs. 3 for a bag of paddy will not feel it any burden at all to have to pay 3 pies more. This duty will ultimately fall upon the consumer resident within the Municipality, and it is but just and proper that the resident enjoying the comfort of good and copious water should pay for it too. The Octroi duties are estimated to bring in a net revenue of not less than seven or eight thousand rupees in the year. This seems to be the only solution which the Council could suggest. It will thus be seen that the additional Rs. 12,000 necessitated be the Government Order is proposed to be met by the Council as follows:—

	RS.
Additional revenue by introducing the last three classes of the profession tax schedule	2,000
Additional revenue by revising the profession tax on salaries ..	3,000
Octroi duties	7,000
Total ..	12,000

8. Before concluding I beg to add that the Council feel extremely thankful to C. J. Weir, Esq., Acting Collector, for the very great interest he takes in this matter. He was present throughout the meeting, took part in the proceedings, and rendered considerable assistance with his valuable advice.

Extract from the Proceedings of the Municipal Council, Trichinopoly Town, passed at the special meeting held on the 27th July 1891.

* * * * *

Read G.O., No. 671 M., dated 4th May 1891, communicating the revised scheme of water-supply recommended by the Sanitary Engineer for suggestions as to how the increased initial outlay and working expenses can be met.

The Act as it stands at present, the rules thereunder, and G.O., No. 808 M., dated 19th May 1890, refusing the extra contribution of tolls collected by the District Board, place it beyond the power of the Council to find the additional amount required by the Government Order under reference. Even by working out the last three classes under schedule A, the Council do not expect to realize anything over Rs. 2,000 per annum.

The Council considers that it would be very inadvisable to raise the maximum rate of taxation on buildings and lands to 10 per cent. The Council is unanimously of opinion that the utmost point of taxation has already been reached under these heads in this Municipality.

The Council would crave for special legislation to enable it to find means. It is respectfully suggested that schedule A should be amended in a way to make all persons holding salaried appointments from Rs. 30 and upwards pay higher rates of profession tax. The following rates are proposed:—

Appointments and salaries—	RS.
From Rs. 30 to 50 rupees	3
„ „ 50 to 100 „	6
„ „ 100 to 200 „	12
„ „ 200 to 500 „	25
„ „ 500 to 1,000 „	50
„ „ 1,000 to 2,000 „	75
„ „ 2,000 and upwards	100

Government is also solicited to legislate with a view to enable the Council to levy Octroi duties on the following articles entering municipal limits:—

Paddy and rice, horse-gram, dholl, cotton seeds, coriander seeds, oil-seeds, dry fish, &c.

In this connection the Council would beg to represent that the granting of the prayer of the petitioners in G.O., Mis. No. 357 M., dated 13th March 1891, claiming exclusion for their lands from within municipal limits and consequent exemption from municipal taxation, would materially cripple the resources of the Council already slender.

(Signed) S. T. RUNGASWAMI,
Chairman.

Camp No. 15.

Forwarded to Government.

2. As regards the calculations, I have these remarks to offer.

The Council have taken no account of the accumulation of the extra income they are now in possession of for the two years intervening before they will have to borrow—*vide* paragraph 5, G.O., No. 808, Municipal, dated 19th May 1890. They have also left out of their calculation the contribution from general revenues which was estimated at Rs. 3,300 by Mr. Fawcett in his endorsement No. 98-2, dated 28th November 1890, read with G.O., No. 62 M., dated 17th January 1891. No reason is given for omitting this sum. If it is allowed to remain, the calculation of the annual amount to be provided by the Municipality would work out as follows:—

	RS.
Half cost of original outlay to be paid by Municipality	1,79,000
Deduct savings available now	19,500
Deduct accumulation of extra income for 2 years at Rs. 15,700* per annum	31,400
	50,900
Amount remaining to be borrowed by Municipality	1,30,000
Annual payment required to clear this off	7,800
Add proportionate working charges	21,500
Add cost of repair of pipes	5,000
Total ..	34,300

I have written to Mr. Jones as to the annual cost to Municipality of the repair of pipes, and he tells me that it cannot be safely taken as less than Rs. 5,000, as the length of piping for the sole use of the Railway and Sepoy lines is practically nothing and that of the joint line will be small.

To meet this the Council have arranged to improve their income by Rs. 22,900 and to provide Rs. 3,300 from General Revenues—in all Rs. 26,200. This leaves an annual deficiency of Rs. 8,100. I have carefully considered the possible means of making good this deficiency and have come to the conclusion that beyond Rs. 2,000, the estimated receipts by extending the profession tax to the last three classes of the schedule, nothing can be done until the Legislature has conferred additional powers of taxation.

It is unnecessary for me to discuss here the proposals of the Municipality as to the manner in which this taxation should be imposed. In the interval, however, we have to face the fact that the adoption of the scheme in its entirety would create a yearly deficit of about Rs. 6,000 in the municipal finances.

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* *I.e.*, the additional income of the Municipality as estimated in papers read with G.O., No. 62 M., dated 17th January 1891, less water cess.

The only feasible proposals under the circumstances seem to me to be—

1st. That Government should make a larger grant towards the project from Provincial funds.

2nd. If Government does not see its way to doing so, I would propose that the loan to the Municipality should be limited to a sum, the repayment of which, with interest together, with the working charges could be undertaken by the Municipality with the income it can now properly estimate on. When the amount thus borrowed from Government together with the sums received from Government, the Military Department and the Railway are expended, it is hoped that power to the Municipality to raise a larger income will have been granted by the Legislature and the remaining sum necessary to carry out the work could then be borrowed.

If, however, the law should then be still unaltered, I presume that some portion of the scheme could remain for the time unexecuted or the pumping charges might be kept down by providing at first a smaller supply of water than 15 gallons per head.

Kulitalai,
18th August 1891.

(Signed) C. J. WEIR,
Acting Collector.

From Colonel J. M. SMITH, Inspector-General of Jails, to the Chief Secretary to Government, Judicial Department, dated Cuddapah, 3rd August 1891, No. 286.

With reference to G.O., No. 1672 W.,* dated 20th June 1891, in which the Superintendent of the Geological Survey expresses a very strong opinion that it is no use going on boring wells near the Trichinopoly Jail, and thinks it would be far better to collect water by surface collection, I have the honour to report, for the information of Government, that the estimate for a surface collection prepared by the Jail Superintendent, referred to by Mr. Martin in his letter contained in G.O., No. 1451 W., † dated 27th May 1891, was only for a six months' supply for 1,000 men at 5 gallons a day. I have lately been all over the ground and find that the collecting surface can easily be doubled in size. I have directed the Superintendent to have an estimate prepared for a very much larger collecting surface and larger reservoirs. When ready, I will submit it to Government for sanction. It appears to me now, as it did a year ago, to be the only means of getting a good water-supply for the jail.

* Communicated with G.O., dated 8th July 1891, R. No. 715, Judicial Department.

† Communicated with G.O., dated 2nd July 1891, No. 1306, Judicial Department.

2. I made inquiries as to whether the proposed scheme of raising the Cauvery water to a reservoir on the rock, and thence by pipes into the town of Trichinopoly, could be extended to the jail, but the District Engineer thought that it could not be done as the jail is on such high ground.

Transferred to the Local and Municipal Department, with reference to the Honorable Member's remarks.

(Signed) A. BUTTERWORTH,
Ag. Under Secretary.

31st August 1891.

No. 762.

Referred to the Sanitary Engineer for report as to whether the scheme proposed by him for supplying the town cannot be extended also to the jail, and, if so, at what additional expense.

(By Order.)

FORT ST. GEORGE,
16*th September* 1891.

(Signed) N. S. BRODIE,
Ag. Assistant Secretary.

To the Sanitary Engineer.

From J. A. JONES, Esq., MEM. INST. C.E., F.R.S.E., Sanitary Engineer to Government, to the Chief Secretary to Government, dated Fort St. George, 1st October 1891, No. 1371.

In reply to your memorandum, dated 16th September 1891, No. 762, referring to me the consideration of the question as to whether the Trichinopoly water-supply scheme cannot be extended to supply the jail, I have the honour to report that it is quite possible to do so and that without necessitating any increased lift at the pumping station.

2. A branch to the jail can be taken from the branch which is intended to supply the Railway (Junction) station and Sepoy lines adjacent and will pass along the Pudukóta road direct to the jail. The branch will consist of 5,000 feet of 4-inch and 5,750 feet of 3-inch pipes with the necessary valves, fittings, &c., and the water will be delivered at the rate of 15,000 gallons daily or 15 gallons per head (and during 6 hours at double this maximum rate) and at a pressure of about 10 feet at the jail. The necessary hydraulic gradient demands these sizes of pipe and no reduction can be made in this respect.

3. To the Trichinopoly scheme there are already three contributors, the Jail department will be a fourth, and it is only right that it should bear a proportion of the cost of the scheme. The supply to the jail is so small that, in some cases, it has been difficult to arrive at the exact proportion payable by the jail. The following statement shows, as nearly as can be calculated, what proportion that will be and by comparing this statement with the original statement (*vide* paragraph 36 of my letter printed along with G.O. of 4th May 1891, No. 671 M., Local and Municipal) it will be seen that the inclusion of the jail is advantageous, to a small extent, to all the original subscribers :—

—	Town.	Railway.	Sepoy Lines.	Jail.
	RS.	RS.	RS.	RS.
Infiltration works	22,922	2,547	1,069	382
Engine and boiler house	10,927	4,334	1,817	532
Engine, boiler and pumps	67,031	26,550	11,150	3,269
Pipes	1,77,585	20,720	8,700	2,000
Valves and fountains	15,185	1,769	740	180
Laying pipes	21,724	2,532	1,063	255
	3,15,374	58,452	24,539	6,618
Contingencies, at 12½ per cent.	39,626	7,368	3,091	832
	3,55,000	65,820	27,630	7,550
As against previously	3,58,000	69,000	29,000	..

4. As regards pumping charges, the Municipality will not benefit by the inclusion of the jail, but the other two contributors will, as the jail will now share in lifting the town's water the extra 40 feet (*vide* paragraph 33 of my letter above referred to).

5. The pumping charges will be modified as shown below :—

—	—	Previously.		Now.
		Daily.	Annually.	Annually.
		RS.	RS.	RS.
Town	900,000 gallons, 105 feet, at 10 annas per 1 million gallons, 1 foot high	59	21,500	21,500
Railway Sepoy lines	142,000 gallons, 145 feet 900,000 gallons, 40 feet	35·6	9,000 4,000	..
Railway Sepoy lines and Jail	157,000 gallons, 145 feet 900,000 gallons, 40 feet	..	..	13,410
	The Rs. 13,410 will be divided as follows :—			
	Railway $\frac{100}{157}$ =	..	..	8,542
	Sepoy lines $\frac{42}{157}$ =	..	..	3,587
	Jail $\frac{15}{157}$ =	..	..	1,281

This will represent a saving annually to—

	RS.
Railway, of	458
Sepoy lines, of	413

6. The cost of the works which will appertain to the jail alone will be as follows :—

	Tons.
5,000 feet of 4″ pipes	39·10
5,750 feet of 3″ „	34·15
	74·5
Add for deviation in weight and breakage	5·5
	80·0

	RS.
at Rs. 125 =	10,000
Laying and jointing pipes, at Rs. 15 per ton, 80 tons, at Rs. 15 =	1,200
Five 4″ valves complete =	250
Five 3″ „ =	175
One branch pipe, 9″ × 4″ =	20
Total	11,645
Add 12½ per cent.	1,455
Grand Total	13,100

Nothing has been put in the estimate for distribution works inside the jail; their cost will be small and they can be arranged for at any time.

7. The total cost of the works will therefore be represented by a payment of Rs. 20,650 and an annual expenditure of Rs. 1,280. The two sums together represent little more than 6 annas per 1,000 gallons of water to be supplied.

In connection with this matter, I would refer Government to my No. 1288, dated 18th September 1891, in connection with the supply to Coimbatore Jail. I feel assured that it will be better to provide a supply by an extension of the town water-works than to depend on such an unsatisfactory and doubtful source of supply as a gathering area will be.

From the Agent, South Indian Railway, to the Consulting Engineer for Railways, dated Trichinopoly, 15th September 1891, No. 1458.

Your No. 1154 of the 17th ultimo, I have the honour to state that I am not prepared, for the reasons stated in the following copy of a report which I have received from the Acting Chief Engineer, to accept, on behalf of the South Indian Railway Company, the terms proposed in Mr. Jones' modified scheme for the supply of water at Trichinopoly :—

"In the water-supply scheme as first proposed and estimated by Mr. Oldham, the quantity of water to be supplied to the Railway Company was 100,000 gallons, and as the whole of the supply for Town, Railway and Military requirements was to be raised to the same height, a charge proportional to the quantity of water required for each section was the proper division of the estimate. The quantity provided per head of population was then fixed at 10 gallons and as the estimate framed by Mr. Oldham for construction and working showed that the supply to the Railway by a joint scheme could be obtained at a less cost than by the Railway carrying out their own work, the Chief Engineer gave his opinion in favour of the joint scheme. As Mr. Jones now points out that the reservoir project was much under-estimated, it is most probable that Mr. Logan would have adhered to his original decision in favour of the Railway carrying out their own work had the work been then estimated to cost 4½ lakhs of rupees.

"The proposal of Mr. Jones for direct pumping affects the cost of working, and as sufficient power must be maintained to pump up to 145 feet instead of 105 feet as required for town purposes, his argument that the Railway and Cantonment should pay for the extra cost of pumping is a fair one. I do not agree with him, however, that the Railway should be called upon to pay a proportionate portion of the initial charge for the extra cost of enlarging the pipes and other works to provide 15 gallons a head to the town. This supply has nothing to do with the Railway. The town supply might have been fixed at 20 gallons or more and the same argument would have applied.

"The Railway require 100,000 gallons a day and for this is prepared to pay, but if the cost of the joint scheme makes the figure to be paid by the Railway Company more than we could carry out our own separate supply for, the only inducement for joint action is done away with.

"My own opinion is that the Railway Company had much better carry out their own water-supply. Several years have already been wasted. In March 1888 the approval of the Board was obtained to the expenditure of Rs. 58,000 for a direct supply from the Cauvery and if this had been put in hand, we should have had by this time an unfailing source to draw from. The discussion on the town scheme may continue for years and the prospect of a good supply of water to the Junction station indefinitely postponed."

From the Consulting Engineer for Railways, Madras, to the Agent, South Indian Railway, dated Madras, 23rd September 1891, No. 1376.

In continuation of my letter, No. 1373, dated 22nd September 1891, I have the honour to suggest if it would not be possible to arrange for the water required by the Railway being delivered by the Municipality into a small reservoir at a height of 105 feet above the pumping station, the Railway making its own arrangements for lifting the additional 40 feet required for the Railway service. As such an arrangement would possibly enable existing pumping appliances to be utilized, and a storage reservoir only 40 feet × 40 feet × 10 feet would hold a day's supply, the cost of this scheme might be less than a separate arrangement. The plan now suggested, at any rate, appears more desirable than that put forward by Mr. Jones, where, in addition to the heavy first cost, the Railway have to pay apparently Rs. 5,824 a year for raising Municipal water. It is presumed that, under this scheme, the Railway would only pay according to consumption proportion pure and simple.

From the Agent, South Indian Railway, to the Consulting Engineer for Railways, dated Trichinopoly, 28th October 1891, No. 1685.

Your letter No. 1376 of the 23rd ultimo, I forward, for your information, the following copy of a report which I have received from the Acting Chief Engineer, in which I concur :—

"I enclose a copy of the estimate for the separate water-supply from the river Cauvery, amounting to Rs. 57,742, but to this I find, in later correspondence, Rs. 2,000 were added to carry the take-off from the Cauvery beyond the confluence of the Kodamurty, making the total estimate Rs. 59,742—in round figures Rs. 60,000. I have gone through the figures of this estimate. The rate put down for piping is too low and the estimate would have to be increased by Rs. 9,000, making a total of Rs. 69,000.

"What I meant to convey in the paragraph of my letter referred to by the Consulting Engineer is that, as the cost of machinery and pumping to raise the 900,000 gallons to the 142 feet height will be greater than that for the supply of 600,000 gallons, I do not agree that the extra cost of raising the 300,000 gallons 142 feet should be charged to the Railway.

"There are no details of the estimate for direct pumping the 600,000, but taking the same proportions as per the estimate for 900,000 gallons, the capital cost to the Railway should be about Rs. 60,000 and the working charge Rs. 7,200 per annum. This latter figure does not, I understand, include interest on the capital expenditure and would have to compare with the working expenses as given by the Locomotive Superintendent of Rs. 3,750 per annum. So that, to join Mr. Jones' scheme, the Company would be put to an annual charge of over Rs. 5,000 for working expenses above what we could ourselves do the work for with our own separate supply.

"The suggestion of the Consulting Engineer that we should take the Municipal water at the 105 feet level and do the rest of the pumping ourselves would, if carried out, be a satisfactory one, but I cannot say whether the Railway Company could accept it until I know what the price per 1,000 gallons delivered by the Municipality would be. The existing pumping station at the Wyacondan could be utilized by the construction of a cistern to hold a day's supply. The Locomotive Superintendent's estimate for pumping from the Wyacondan channel is Rs. 2,500 per annum and 7½ per cent. in the estimate of Rs. 69,000, less the cost of the new tank at Trichinopoly which, in any case, must be constructed, amounts to Rs. 4,150.

"The cost of the pumping 100,000 gallons 105 feet high, at 10 annas per million gallons, one foot high, amounts to Rs. 2,400.

"If, therefore, the Municipality will supply us with 100,000 gallons a day at the Wyacondan pumping station at a cost not exceeding Rs. 6,500, it would be a no more costly arrangement to the Railway Company than that our scheme would be, viz. :—

	RS.
Pumping from Cauvery	3,750
Seven-and-a-half per cent. on expenditure of Rs. 69,000	4,975
Total ..	8,725"

No. 968.

Submitted to Government with reference to G.O., No. 1409 R., dated 19th June 1891.

2. The report by the Sanitary Engineer on the revised scheme for the Trichinopoly water-supply was referred to the Agent, South Indian Railway, and that officer, acting on the advice of the Officiating Chief Engineer, is not prepared to accept the modified proposals.

3. The question of Railway participation in the scheme is dependent on whether the cost of joint action is more or less than that of the separate arrangement, and as the proposals of the Sanitary Engineer would throw an additional annual charge of more than 5,000 rupees on the South Indian Railway, they cannot be accepted.

4. I gather from Mr. Jones' report that he considers the Railway should derive no benefit from the reduced cost per foot-gallon resulting from the adoption of a direct pumping scheme, but on the contrary the Railway should bear the extra cost of a 15-gallon over a 10-gallon supply. With these conclusions, I cannot agree. If the foot-gallon cost of the whole scheme is reduced, surely all the participators should share the advantage, and it must be remembered that if the Municipality are spending more on their own supply, they are getting 50 per cent. more water for the extra expenditure. The increase in supply from 10 to 15 gallons per head is solely for the advantage of the Municipality, and although very desirable, there is no reason why any portion of the additional cost should be borne by the South Indian Railway. It would also appear that if the first cost of the 15-gallons scheme is estimated at Rs. 69,000 for the Railway share, some reduction must result by adopting the 10-gallons per head supply. With regard to the distribution of proportionate charges,

the Railway share under "Pipes" and "Laying pipes" appears to be calculated on consumption proportions. This division seems hardly equitable when it is remembered that the Municipality requires a considerable length of the distributary piping, from which the Railway obtain no service, the latter requiring only a main pipe.

5. The weak point in Mr. Jones' scheme is the needless lifting of the Municipal water through a height of 40 feet. The only party to the joint arrangement who could possibly derive any advantage from the lift is the Municipality, to whom the extra head would be useful in enabling the water to be delivered at a greater pressure. Using Mr. Jones' basis of calculation, the Railway would have to pay annually Rs. 5,783 for raising Municipal water and Rs. 3,308 for their own supply.

6. Having in mind the advantages that should accrue to all parties in the joint scheme under suitable conditions of design and division of charges, I suggested to the Agent, South Indian Railway, a proposal to take delivery of the Railway water at a height of 105 feet. I now learn that, provided the cost of such an arrangement does not exceed that of the separate scheme, the Railway Company offer no objection. The working expenses, interest charges, and first cost of the different scheme to the Railway contrast as follows :—

—	Direct pumping 15-gallons supply.		Direct pumping 10-gallons supply.		Separate Railway scheme.		Scheme taking delivery at 105 feet.	
	Capital cost.	Annual charge.	Capital cost.	Annual charge.	Capital cost.	Annual charge.	Capital cost.	Annual charge.
	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.
First cost ..	69,000	..	57,500	..	69,000	..	55,000	..
Working expense	..	9,000	..	7,000	..	3,750	..	4,000
Interest at 7½ per cent.	..	5, 75	..	4,312	..	5,175	..	4,125
Total annual charge ..	..	14,175	..	11,312	..	8,925	..	9,025

In this statement the first cost of the 10-gallons supply has been taken proportionately from the 15-gallons estimate, interest charges have been added, and the figures of the last scheme based on pure consumption proportions and figures derived from letter, No. 1685, dated 28th October 1891, from the Agent, South Indian Railway.

7. From the statement it appears that the annual costs of the separate scheme and the one suggested by me are about the same. Such being the case, I consider a separate scheme decidedly preferable. The disadvantage of the Railway supply being dependent on a double system of pumping and the chance of friction between the participating parties is done away with. In addition, it is probable that, in actual working, the difference in annual cost would be more accentuated than is shown in the statement, and that less delay would occur in providing the Railway with a very necessary water-supply.

8. I consequently recommend that the South Indian Railway withdraw from the joint scheme, and undertake the provision of a separate supply.

Madras,
3rd *November* 1891.

(Signed) W. V. CONSTABLE, Capt., R.E.,
for Consulting Engineer for Railways.

No. 4933 C.

Transferred to the Local and Municipal Department, with reference to G.O., dated 4th May 1891, No. 671 M., in view to these papers being referred to the Sanitary Engineer for remarks.

(Signed) W. H. COAKER, Lieut.-Col., R.E.,
Joint Secy. to Govt., P.W.D.,
Railway Branch.

7*th November* 1891.

No. 1006.

Referred to the Sanitary Engineer for *very early* remarks.

(By Order.)

Fort St. George,
10*th November* 1891.

(Signed) N. S. BRODIE,
Ag. Assistant Secretary.

To the Sanitary Engineer.

From J. A. JONES, Esq., MEM. INST. C.E., F.R.S.E., Sanitary Engineer to Government, to the Chief Secretary to Government, dated Fort St. George, 19th November 1891, No. 1741.

In reply to reference No. 1006, dated 10th November 1891, I have the honour to reply as follows.

2. The suggestion made by the Consulting Engineer for Railways that the Trichinopoly scheme might be so modified that the water should be delivered to the Railway Company at a pressure due to the lift of 105 feet, which is the lift required for the town alone, was considered by me when drawing out the scheme and the reasons why I did not put this alternative scheme before Government were—(1) that the scheme would be slightly more expensive to the Municipality, (2) that the Sepoy lines near the Railway station also demanded the higher lift, and (3) that it was advisable, for many reasons, to avoid a second pumping station, staff, &c.

3. But in view of the possible withdrawal of the Company from the scheme, I think everything ought to be done to secure the Company's co-operation and that the scheme, with the double pumping station, is more economical for the Railway will be shown in the following remarks.

4. Should the Railway withdraw, Government have still to consider the supplies to the Military lines and the Jail which, I shall presume, throughout this report, will now be a party to the scheme and which inclusion (*vide* my No. 1371 of 1st October 1891) would reduce the Railway Company's and Military contribution even without the reductions which it will be shown can still be effected.

5. As the Sepoy lines and Jail require the higher lift, I propose that the Railway Company should, under the arrangements now to be detailed, still have its water delivered 23 feet above rail level at the Junction station and I will show that this can be done at almost the cost which the Consulting Engineer, in his No. 968, dated 3rd November 1891, paragraph 6, anticipates would be the cost of delivering the water at the reduced level available with the lift of 105 feet at the Cauvery. If my figures are accepted, I trust the Railway Company will find it still possible to remain co-partners in the scheme.

6. As other two bodies, besides the Railway Company, have to be supplied, I propose that the second pumping station should still be a Municipal one.

7. It has been assumed, it is thought, by the Consulting Engineer that the Railway Company, if the town water was delivered with head due to the lift of 105 feet, would require to lift only the extra 40 feet, but the lift will be more than this. The rail level near the Wyacondan channel, according to the datum assumed in our plans, is 378·00 and it may be assumed that the water in the reservoir proposed to be constructed can be maintained at a level of 374·00. The level to which the water must be raised to deliver it to the Railway at 23 feet above rail level at the Junction station (and this lift is necessary for the Jail and Military supplies) is 434·00, so that the lift at the Wyacondan channel, where the subsidiary pumping station will be placed, will be 60 feet and not 40 feet. It might be remarked that in such case the original lift of 105 might still be reduced, but the water must be delivered with pressure for the portions of the town north of the Wyacondan subsidiary pumping station, where a ridge has to be crossed.

8. On such basis then the following calculations have been made:—
The supplies required to be pumped at the Cauvery are—

	Gallons.		Hours.
Town	900,000	in	24
Railway	100,000	„	24
Military	42,000	„	24
Jail	15,000	„	24
Total ..	1,057,000	„	24

and the maximum supply demanded $= \frac{1,057,000}{2} = 528,500$ gallons in six hours, or 1,469 gallons per minute, and the horse-power required will be—

$$\frac{1,469 \times 105 \times 10}{33,000} \;..\; = 47$$

$$\text{Add 80 per cent.} \;..\; = 37$$

$$\text{Total} \;..\; 84$$

keeping one engine in reserve, three engines of 42 horse-power = 126 horse-power, at Rs. 600 = Rs. 75,600.

The cost of these engines will now be distributed in exact proportion to the supply demanded as the lift is the same for all parties or in the proportion of—

—	Town.	Railway.	Military.	Jail.
Proportions	900	100	42	15
Cost	RS. 64,370	RS. 7,150	RS. 3,000	RS. 1,080

At the subsidiary pumping station the amount to be pumped will be—

	Gallons.		Hours.
Town *	109,440	in	24
Railway	100,000	„	24
Sepoy lines (one set only)	21,000	„	24
Jail	15,000	„	24
Total ..	245,440	„	24

$\frac{245,440}{2} = 122,720$ gallons in six hours, or 340 gallons per minute.

The horse-power required at the subsidiary station will be—

$$\frac{\overset{\text{Gallons.}}{340} \times \overset{\text{Feet.}}{60} \times \overset{\text{Lb.}}{10}}{33,000} \;..\; = \text{say } 6$$

$$\text{Add 80 per cent.} \;..\; = \text{„ } 5$$

$$11$$

but say 12 horse-power, and three engines of 6 horse-power would be required, costing Rs. 10,800.

The cost is distributable in the following proportion, viz., that of consumption—

—	Town.	Railway.	Military.	Jail.
Proportions	109·4	100	21	15
Cost	RS. 4,830	RS. 4,390	RS. 930	RS. 650

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* Note.—There are eight fountains placed on Railway branch, and it is for the supply of these that the Municipality has to pay at the second pumping station.

The total cost of the machinery to each party will then be—

—	Town.	Railway.	Military.	Jail.
Main pumping station	RS. 64,370	RS. 7,150	RS. 3,000	RS. 1,080
Subsidiary	4,830	4,390	930	650
Total ..	69,200	11,540	3,930	1,730
As compared with amounts in statement in my letter, No. 1371, dated 1st October 1891.	67,031	26,550	11,150	2,369
Increase or decrease ..	+ 2,169	— 15,010	— 7,220	— 1,539

The following will be, under the new condition, the cost of pumping:—

—	Main station.		Subsidiary station.		Total annually.
	Gallons daily.	Rupees annually.	Gallons. daily.	Rupees annually.	
Municipality	900,000	21,900	109,440	1,591	RS. 23,491
Railway	100,000	2,433	100,000	1,460	3,893
Sepoy lines	42,000	1,021	21,000	306	1,327
Jail	15,000	365	15,000	219	584

and as compared with the statement of cost umping in letter above quoted—

—	ici-ty.	Railway.	Military.	Jail.
As above	s. 491	RS. † 3,893	RS. 1,327	RS. 584
„ in letter No. 1371 of 1st October 1891 ..	500	* 8,542	3,587	1,281
Increase or decrease ..	991	— 4,649	— 2,260	— 697

Some changes are also necessary in the size he pipes. Why that is so is exhibited in the tracing of hydraulic gradients as revi and sent for information. The extra details of the cost is shown in the appendix ; is falls on the Municipality.

9. An addition has to be made on accour a small reservoir near the Wyacondan and new pumping-house. I have not taken the cost of these out in detail. I do not think, however, anything but a well is required to receive the water, whence it can be pumped again, and this I calculate can be erected for Rs. 2,500. The cost of the pumping-house will be about Rs. 3,500. The total of these amounts to Rs. 6,000 and these are divisable in the proportion of—

—	Town.	Railway.	Military.	Jail.
Proportions	1,094	100	21	15
Cost	RS. 2,675	RS. 445	RS. 513	RS. 367

I gather from Colonel Coaker's remarks in paragraph 4 of his letter that he has omitted to note that the difference between the real cost of the 10-gallons scheme of Mr. Oldham and the new 15-gallons scheme is very little. Owing to the fact of under-estimation of cost and to the incorrect principle on which the original amount debitable to the Railway was calculated, it might seem that the Railway gain no

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	RS.
* This in original scheme was	9,000
† As now proposed	3,893
Decrease from original scheme	— 5,107

benefit under the conditions of an increased supply; but that is not so, because the works under Mr. Oldham's plan would, as shown, have cost almost as much and the pumping lift would have been 180 feet against 145 feet under my original scheme and against 105 + 60 = 165 under the one I am now suggesting.

10. Nor are Colonel Coaker's suppositions correct in regard to the debits under pipes and laying pipes. The Company were not charged with any portion of any main except that through which their water is to pass. That the debit was a very reasonable one may, I think, be said because the Railway Company calculates the cost of their own pipe at Rs. 21,009 while my debit was (Jail not included) Rs. 20,900. The Agent in his No. 1685, of 28th October 1891, quotes the Chief Engineer who says that Rs. 2,000 should be added to carry the off-take beyond the confluence of the Kodamurty river (where our proposed pumping station is situated) and that the rate put down for piping is too low and that the estimate would have to be increased by Rs. 9,000. My only fear is therefore that I have not debited a large enough proportion of the cost of the piping to the Company who certainly, in this instance, gain by co-operation.

11. As to the other items in the estimates, I do not think it will be wise to make any reductions in the size of the pump-house, nor of its anticipated cost; if there is any saving, the Company would benefit eventually. There are no changes in the debits as to piping, which remain the s me size, except in some instances where an increase will fall on the Municipality.

12. The general results are that he Company will now be asked to pay Rs. 17,377 less for capital cost and Rs. 107 less per annum, while the shares of the Military and Jail are also decreased.

13. The whole cost of the scheme s also decreased, but unfortunately that of Municipality will be slightly more.

14. A revised estimate is sent and exhibited in detail in Appendix I (1), while in I (2) and I (3) are exhibted the form estimates in my letters Nos. 251 and 1371, respectively.

15. In conclusion, I would point t that the Company are urgently in need of the water and that if the Municipalty lay in commencing the work, the Company may yet withdraw. In G.O., dated 4 May 1891, No. 671, it is stated that the Municipality had to meet an expend re of Rs. 3,100 more than was originally anticipated. This will unfortunately b till further increased as follows:—

	RS.
Proportion of initial cost to be bor by Municipality	3,66,435
Deduct half-grant by Government	1,83,217
	1,83,218
Deduct savings available	15,500
	1,67,718
The yearly sum required to clear off this amount in 30 years with interest at 4½ per cent. will be	10,297
Add proportionate working charges	23,491
Total annual cost to the Municipality ..	33,788
Deduct (Rs. 31,213 — Rs. 3,100—*vide* paragraph 39 of Sanitary Engineer's letter No. 251, of 8th April 1891, embodied in G.O., dated 4th May 1891, No. 671 M., Local and Municipal) ..	28,113
Increased cost of scheme as compared with Mr. Oldham's scheme ..	5,675

This need not form any bar to begin ing the scheme as the greater part of the annual expenditure is for pumping charges which can be reduced by affording a reduced supply to the town; in fact, if the Municipality were only to deliver 10 gallons per head to begin with they can easily arrange to meet the expenditure. I trust, therefore, Government will able to sanction the scheme at an early date and that the arrangements now proposed will be satisfactory to the Company and the other bodies concerned.

ENCLOSURES.

APPENDIX I (1).

SCHEME proposed in oregoing report.

—	Town.	Railway.	Military.	Jail.	Total.
	RS.	RS.	RS.	RS.	RS.
Infiltration works	22,9[illegible]	2,547	1,069	382	..
Engine and boiler house—					
Main	10,9[illegible]7	4,334	1,817	532	..
Subsidiary	2,6[illegible]5	2,445	513	367	..
Engines and pumps—					
Main	64,3[illegible]0	7,150	3,000	1,080	..
Subsidiary	4,8[illegible]0	4,390	930	650	..
Pipes	1,77,5[illegible]	20,720	8,700	* 2,000	..
Additional cost	5,0[illegible]	..	..	..	..
Valves and fountains	15,1[illegible]	1,769	740	180	..
Laying pipes	21,7[illegible]	2,532	1,063	255	..
Additional cost	4[illegible]	..	..	..	..
	3,25,720	45,887	17,832	5,446	..
Contingencies, at 12½ per cent.	40,715	5,736	2,229	680	..
	3,66,435	51,623	20,061	6,126	..
Total ..	..	..	..	..	4,44,245

* This is without the piping which is to supply the Jail an solely for the use of the Jail—*vide* my No. 1371, dated 1st October 1891.

APPENDIX I (2).

Vide my letter No. 251, of 8th A ril 1891 (Original scheme).

—	Town.	Railway.	Sepoy line.
	RS.	RS.	RS.
Infiltration works	23,253	2,583	1,084
Engine and boiler house	11,046	4,622	1,942
Engines, boilers and pumps	67,256	28,692	12,052
Pipes	1,79,327	20,900	8,778
Valves and fountains	15,337	1,787	750
Laying pipes	21,944	2,557	1,073
	3,18,163	61,141	25,679
Contingencies including establishment, at 12½ per cent.	39,837	7,859	3,321
	3,58,000	69,000	29,000
Total ..		4,56,000	

APPENDIX I (3).

Vide my letter No. 1371, of 1st October 1891 (O riginal scheme, but with Jail included).

—	Town.	Railway.	Sepoy lines.	Jail.
	RS.	RS.	RS.	RS.
Infiltration works	22,922	2,547	1,069	382
Engine and boiler house	10,927	4,334	1,817	532
Engines, boiler and pumps	67,031	26,550	11,150	3,269
Pipes	1,77,585	20,720	8,700	2,000
Valves and fountains	15,185	1,769	740	180
Laying pipes	21,724	2,532	1,063	255
	3,15,374	58,452	24,539	6,618
Contingencies, at 12½ per cent.	39,626	7,368	3,091	832
	3,55,000	65,820	27,630	7,550
		4,56,000		
As against previously	3,58,000	69,000	29,000	..
		4,56,000		..

Order—dated 30th November 1891, No. 2113 M., Local and Municipal.

With the first of the letters read ab e, the Chairman of the Municipal Council, Trichinopoly, submits proposals for defra ing the cost of the scheme of water-supply sanctioned in the second Government orde read above. It is now, however, proposed to modify the arrangements approved of in t at order with a view to the inclusion of the Jail in the general plan and to meet the jections taken by the South Indian Railway Company to the scheme and to the distr bution of its cost between the participants. According to the modified scheme now su mitted by the Sanitary Engineer in the last letter read above, the cost will be redistr uted as follows :—

	Capital outlay.	Working charges per annum.
	RS.	RS.
Municipality	3,66,435	23,491
Railway Company	51,623	3,893
Military Department	20,061	1,327
Jail	6,126	584
Total ..	4,44,245	29,295

The arrangements proposed seem to be s isfactory, but as they differ considerably from those previously submitted, the papers ll be communicated to the various bodies and departments concerned in continuation previous orders. It is observed, from paragraph 6 of the endorsement by the C sulting Engineer for Railways, transferred with the fourth letter read above, that t cost of a separate scheme for the Railway Company, as now contemplated, will be s. 8,925 per annum, while the share debitable to the Company under the revised schem submitted by the Sanitary Engineer will be Rs. 7,765 only per annum. This schem should, therefore, be considered at a very early date by the Railway Company an its decision communicated to Government as soon as possible.

2. The proposals now made entail considerable increase in the outlay to be met from Municipal funds, but the Sanitary ngineer is of opinion that this need not form any bar to the execution of the schem as arrangements may be made for supplying the town at first with only 10 gallons o water per head of population, instead of 15 gallons per head. Mr. Jones does not ate what would be the saving to the Municipality under these conditions, nor whet er it is possible, while delivering the smaller quantity of water to the town, still to s pply the full quantity to the Railway, Military lines and Jail. The Sanitary Enginee will furnish the necessary information with regard to these points.

3. Turning to the financial part f the question, so far as the Municipality is concerned, it is clear that the cost of t scheme, when in full working order, cannot be met from Municipal funds under p esent conditions. In the circumstances now stated, the Government will be prepare to increase the grant-in-aid from Provincial funds to Rs. 2,22,000 and the share of he capital cost debitable to the Municipality will thus be reduced to Rs. 1,44,435. As pointed out by the Collector, the Council should be able to meet Rs. 31,400 of his from the accumulated savings of the two years preceding the commencement f operations. The amount remaining to be borrowed will thus be Rs. 1,13,035 or, ay, Rs. 1,10,000, the balance being met from general revenues in the course of exec ing the work. The annual charges involved by the scheme will thus be—

	RS.
Service of loan (30 years at 4¼ pe cent.)	6,555
Working charges	23,491
Repair of pipes	5,000
Total ..	35,046

Against this the Municipal Council an l the Co ector have, from time to time, submitted proposals which may be summa rized as fo lows :—

Sources of inc eased income.	Amount.
	RS.
1. Extra revenue from revisior of house and land taxes, completed November 1890	5,400
2. Water-tax on portions of the town supplied	10,500
3. Extra income from markets	4,000
4. Slaughter-house	1,000
5. Saving in existing water establishments, &c	2,000
6. General revenues	3,300
7. Extension of profession-tax to the last th re sses of the schedule.	2,000
Total ..	28,200

It thus appears that there will be an annu eficit of at least Rs. 6,846 which can only be met by increased taxation for wh legislation will be necessary. The question of revising the arts-tax schedule will onsidered when the Act is amended, but the imposition of octroi duties, as sugge y the Council, cannot be permitted. Final orders relative to the execution of the e will issue when the information called for in these Proceedings has been furnished and the decisions of the Military Department and of the Railway Company on the questions referred to them have been received.

(True Extract.)

J. F. PRICE,
Chief Secretary.

To the Chairman, Municipal Council, Trichinopo
through the C tor.
" Public Works Department, Railway Bran
with three enclosu eturn d.
" Military Department.
" Judicial Department.
" Sanitary Engineer, with one enclosure re

Exd. P. L. Pereira.

Govt. of {1891} Madras.

LOCAL AND MUNICIPAL.

Issued

Recd.

G.O., 30th Nov. 1891, No. 3113 M.

NOVEMBER.

Water-supply.

Passing orders on the distribution of the cost of the extended — scheme of Trichinopoly now proposed by the Sanitary Engineer.

Municipality	Rs 3,58,0
Deduct half grant by Government	1,79,000
	1,79,000
Deduct savings [illegible] available	15,500
Which the Council will have to borrow	1,63,500
The yearly sum required to clear off the debt	9,713,
Add proportionate working charges	21,500
Add proportionate cost of wear & tear out of Rs 5,500 which Government has fixed for the purpose in para 2 of its order	3,
Total	Rs 34,6

which is 6640 more [illegible] the original estimate.

3. From G.O. No

dated 1[illegible] 1890, it will be se

ouncil confined themselves
able to provide anything
beyond Rs 23,500 out of the 28,000
required. The yielding power
of the Municipal Revenues fell
short of the required amount
by 5,000 Rs and now they have
to find an extra sum of Rs 7000 (in round figures).
n all the council have to find
ut Rs 12,000. The council be-
lieve that without special
egislation they would not
e able to provide for this
un at all. The last 3 classes
schedule A of the Act are
ot at present in operation in
Municipality and the Council
uld beg permission to enforce
Same. This however seems in
eye of the most sanguine
uncillor cannot yield more

than Rs 2000 in the year.

4. A majority of the
Councillors was for reiterating
the request about contribution
from tolls contained in para 6
of the Chairman's letter quoted in
G.O. No. 806 M dated 19 May 18
It appeared to them that the
chief reason why Governmen
had refused the extra contri-
-tion was because Governmen
believed that the scheme was pos
-ble without it. (Vide para 5
of G.O. No. 806 M dated 19 May 1
and they urged, that now, the
the scheme is becoming impra
-ticable without it, perhaps G
-ment might change its vie
and be pleased to give a f
-ble hearing to our cause. Bu
the way in which the refus
was couched by Governme

re so plain and peremptory
that they thought [illegible] over the
matter and concluded there
was no alternative left to them
in the case.

5. With regard to the
raising of the maximum rate
f taxation on buildings and
ands, the Council beg once more
draw the kind attention of
overnment to para 6 of the
hairman's letter quoted in G.O.
o 808 M dated 19 June 1890.
Council now beg to add
at the state of things is now
o better.

6. The Council are of
inion that in order to ena
le them to raise funds Govern
ent should be pleased to
low them to open such sources

2/13 M

of income. They have ventured
upon suggesting certain modi
fications in the Professional
tax rates. A good number of
residents are drawing salaries
under Rs 100 and they enjoy pe
fect freedom just now from
Profession tax calls. The Counci
are of opinion that it is but
just and equitable that th
should also contribute towar
securing for this town the in
estimable benefits of a goo
water-supply. The rates sug
-gested everything conside
seem also very fair. Just t
take one instance – an ar
-san or trader making not m
than 40 Rs per mensem has
to pay Rs 6 to the Municip
being placed in class V. It
submitted that a person

from Rs 50 to 100 [illegible] holder
of an appointment should
also be called upon to pay
not less than the [illegible] and
when the risks which the trader
who begins with a capital has
to run from adverse seasons
ind bad debts are considered,
e proposal of the Council that
e appointment-holder should
lso be taxed, will not it is
elieved, appear in any way
unreasonable. It [illegible] expected
at this will bring in about
00 Rs in the year.

7. The last source of
come which the Council can
ik of at present is the levy
ig of Octroi duties on certain
ticles of consumption
[illegible] Municipal limits.

M132m

They are very reluctant to take
up this ground especially in
view of the G. O. Nos 1000, 1001 M
of 2d July 1891 disallowing this
kind of taxation. But there
is no help for it and the Counci
could not suggest any other
method of taxation which
would be so little felt as this.
A consumer having to pay 3 Rs
for a bag of paddy will not
feel it any burden at all to ha
to pay 3 pies more. This dut
will ultimately fall upon the
consumers resident within t
Municipality and it is but jus
& proper that the resident
enjoying the comfort of good
copious water should pa
for it too. The Octroi dut
are estimated to bring in
net revenue of not less th

7 or 8 thousand Rupees in the year. This seems to be the only solution which the council could suggest. It will thus be seen that the additional 12,000 Rs necessitated by the G.O. is proposed to be met by the Council as follows.

Additional revenue by introducing the last 3 classes of the Profession tax Schedule	2000 Rs
Do by revising the Profession tax on salaries	3000
Octroi duties	7000
Total Rs	12,000

8. Before concluding beg to add that the council extremely thankful to C. J. Weir Esquire, Acting Collector, for the very great interest he takes in this matter. He was present throughout the meeting, took part in the proceedings and rendered considerable assistance with his valuable advice.

I have the honor to
Sir,
Your most obdt.
M Rungaswami
Chairman

2113

Extract from the Proceedings of the Municipal Council, Trichinopoly Town, passed at the special Meeting held on the 27th July 1891.

Present.

M. R. Ry. S. T. Rungaswami Aiyar Avl B.A., B.L. Rao Bahadur } chairman

Do. Syed Kadher Badshah Sahib Bahadur Khan Sahib } Rev: officer

Do. Aiyakannu Pillay Avl Rao Sahib } Councillor

Do. Innassimuthu Pillay Avl Do - Do

Do. T. S. Rungaswami Pillay Avl Do Do

Do. A. C. Chidambaram Mudaliar Avl Do Do

Do. T. B. Arumuga Mudaliar Avl Do Do

Do. R. Swaminatha Aiyer Avl Do Do

Do. T. Narayanaswami Naidu garu Do – Do

Do. T. S. Umamakeshwara Aiyer Avl Do – Do

Do. P. Savaroya Pillay Avl Do. Do

Do. C. E. Sundaram Aiyer Avl Do.

x x x

Read G.O. No 675 M ated 4th May 1891 communicating the revised scheme of Water Supply recommended by the Sanitary Engineer for suggestions as to how the increased initial outlay and working expenses can be met.

The Act as it stands at present, the rules thereunder and G.O. No 808 M dated 19th May 1890 restricting the extra contribution of tolls collected by the District Board place it beyond the powe of the council to find the additional amount required by the G.O. under reference. Even by working out the last three clauses under Schedule A, the council do not expect to realize anything over 2000 Rs per annum.

The Council considers that it would be very inadvisable to raise the maximum rate of taxation on Buildings and Lands to 10 per cent. The council is unanimously of opinion that the utmost point of taxation has already been reached under these heads in this Municipality.

The council would wave for special legislation to enable it to find means. It is respectfully suggested that Schedule A should be amended in a way to make all persons holding salaried appointments from 30 Rs and upwards pay higher rates of Profession ta

The following rates are

proposed.

Appointments & Salaries

from 30 to 50 Rs	3 Rs
50 to 100	6 Rs
100 to 200	12 Rs
200 to 500	25 Rs
500 to 1000	50 Rs
1000 to 2000	75 Rs
2000 & upwards	100 Rs

Government is also solicited to legislate with a view to enable the Council to levy Octroi duties on the following articles entering Municipal limits:

Paddy & Rice, Horse gram, Dholl, cotton seeds, Coriander seeds, oil seeds, Dry fish etc.

In this connexion, the Council would beg to represent that the granting of the prayer of the petitioners in G.O. No. 357 M Mis dated 13th March 1891 claiming exclusion for their lands from within Municipal limits and consequent exemption from Municipal taxation would materially cripple the resources of the Council already slender.

(Sd) S.T. Rungaswami
Chairman

(True copy)

Municipal office
Trichinopoly
10th August 1891

S.T. Rungaswami
Chairman

4. It will be noticed that the cost of pipes and laying them is Rs. 50,000 in excess of Mr. Oldham's estimate. That the works as designed could not be carried out for the original sum admits of no doubt.

5. The next point considered was the probable working expenses: these are put down at Rs. 20,000 per annum; the additional horse power allowed for friction of engines is only 33 per cent., whereas about 75 per cent. should be allowed.
The horse power at work would therefore be 82. The amount of fuel assumed to be required is low, and the cost, taking the same method of calculation as that adopted on page 9 of the printed report, would be Rs. 20,000 against Rs. 12,131, so that the total cost of pumping would be Rs. 28,000.

6. But from many actual examples we know that even this is a very low estimate, and the proper basis of calculation and the one adopted throughout this report is to take the cost of pumping at 10 annas for each 1,000,000 gallons raised one foot high. On this basis the pumping could not be done for less than Rs. 32,000 per annum.

7. The scheme proposed to be adopted by the Municipality is therefore one which would require very much greater expenditure than anticipated.

8. Seeing that this was so, it appeared very desirable to see whether by altered designs reductions were feasible, and with that idea two other schemes were investigated. Considering the whole matter of water-supply and looking to what has occurred in other towns, it became a question as to whether it was advisable to proceed with any scheme by which the supply of water was limited to 10 gallons per head. An increase from 10 to 15 gallons per head was a serious matter, seeing that it was desirable to keep the cost of the works as low as possible; but it will be seen that, while there is an increase in the total cost of the scheme, that increase is small, as scheme No. 5 (a direct pumping scheme) shows a total cost of Rs. 4,56,000 against Mr. Oldham's estimate (revised) of Rs. 4,43,000 for a 10 gallons per head scheme. The annual cost of pumping is also, however, slightly in excess.

9. Mr. Oldham's scheme did not originally contemplate a supply to the districts of Woriyur and Puttur, though he, when the necessity was brought to his notice, suggested pumping for 24 hours daily instead of the 15 which his scheme contemplated.

10. All the schemes included in the comparative estimate at the end of this report allow for an extension to the districts of Woriyur and Puttur, but none of the estimates include the cost of distributing pipes through those districts, nor do the estimates for working charges include the supply to those districts.

11. To show how with an increased supply of 15 gallons per head it will still be possible to construct works at a cost very little more than that anticipated in Mr. Oldham's scheme (revised estimate) for 10 gallons per head, I must point out the difference in the two schemes.

12. Mr. Oldham's scheme includes a reservoir at a high elevation, and to this high elevation is due the high annual pumping charges, the elevation being very much greater than required, but no feasible site is available at a lower level.

13. In a direct pumping scheme no reservoir is used, and the security obtained by a reservoir containing a day's or one-and-a-half days' supply is obtained by having reserve power at the pumping station instead of a reserve of water in the reservoir. The water again with a direct scheme is pumped only as high as the draught from time to time demands, so that at nights the pumping would be comparatively small. In a reservoir scheme all the water, day or night, must be pumped to the same height; hence the economy in pumping charges with a direct scheme. It will be seen that the total annual pumping charges of the schemes compare thus—

	Direct scheme.	Reservoir scheme.
	RS.	RS.
Ten gallons per head	25,000	30,500
Fifteen gallons per head	34,500	38,000

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14. The other points on which the schemes now suggested to Government differ from Mr. Oldham's scheme are few and unimportant except in regard to the manner of collecting the water from the river, and this is somewhat similar to a later design suggested by Mr. Oldham, viz., the substitution of a filtration gallery for the wells in the river bed, and this plan, after due consideration, has been adopted as likely to be less expensive, more easy in construction and less liable to destruction by floods than a line of wells connected by pipes; the cost will be much the same.

15. Having now pointed out in what the schemes as now proposed differ from the original scheme, I may briefly describe the same.

16. In the Cauvery there will be a filtration gallery. The length of this gallery has been fixed at 400 feet after a consideration of the results of the experiments made as to the quantity of water which can be obtained from the sandy bed of the Cauvery. The results of the experiments and the calculation for the length of the gallery will be found embodied in a memorandum which forms an appendix to this report.

17. The site for the gallery has been fixed about 1,000 feet higher up the river than the point at which Mr. Oldham proposed to draw his supply, and this for conservancy reasons as there is a road to the river and across it during the dry months just below the site now selected.

18. From the filtration gallery will run a main which will be connected to the pumps at the pumping station; the water will not be visible from the time it leaves the Cauvery bed until it reaches the consumer.

19. Near the river will be placed the pumping station which I propose to supply with Worthington or beam engines and probably Colonial boilers; the former engines are being used in Bombay and Calcutta water-works, the latter at Agra and other places in the North-Western Provinces.

20. From the pumping station will proceed the rising main, the diameter of this as of other pipes being dependent on whether the 15 gallons or 10 gallons per head scheme is adopted; in the former case the main will be 18," in the latter 16". The sizes of the sub-mains are fixed with relation to the population in the districts to be supplied.

21. In either scheme a main will be continued from the fort to the junction station of the railway, which will deliver 100,000 gallons in 12 hours at a height of 23 feet above rail level. This main also carries 21,000 gallons in 12 hours for the sepoy lines beyond the railway station. A similar provision is made for the sepoy lines now occupied by the 1st Pioneers near the road to Tanjore; by additional pumping the scheme will supply 80,000 gallons to the two sets of lines if necessary.

22. Fountains, sluice valves, &c., will be provided in the numbers shown in the estimates and at the positions as shown on the plans. A sufficient number of hydrants, &c., are also provided.

23. The first point which requires settlement by Government is whether the supply is to be 10 gallons or 15 gallons per head to the civil population.

24. The actual difference to the Municipality of the larger scheme as compared with the lesser, as will be seen by and bye, appears very small when it is remembered that the supply is half as much again; but before the comparative cost of the two schemes to the Municipality can be shown, we must eliminate from the total cost the proportionate charges which should be borne by the Railway Company and the Military Department, for, whichever scheme (the 10 gallons or 15 gallons per head) is adopted, the supplies to the railway and to the sepoy lines stand unaltered.

25. It was suggested in G.O., dated 2nd August 1889, No. 948 M. (and the basis of arrangement was afterwards accepted by the Council—*vide* G.O., dated 19th May 1890, No. 808 M.) that the charges should be divided according to the proportionate supplies. On page 7 of the latter Government order an allotment was made thus—

		Rs.
For municipal purposes, 600,000 gallons per day	.. ..	2,90,750
" sepoy lines 42,000 " "	.. ..	20,350
Supply for S.I. Railway 100,000 " "	.. ..	48,460
	Total ..	3,59,560

26. Working then on the same basis as that on which the allotment as above quoted was made, the new scheme for 15 gallons per head would compare as follows.

27. The total original cost is Rs. 4,56,000.

	New scheme, 15 gallons per head.	Mr. Oldham's, 10 gallons per head.
	Rs.	Rs.
Municipality	3,94,100	2,90,750
Sepoy lines	18,100	20,350
Railway	43,800	48,460
Total ..	4,56,000	3,59,560

28. Now, if the principle which was adopted was correct, it is evident that, as the company and lines are getting the same supplies and facilities as before, their proportionate payments should in any case not be less; but we find that if the Municipality adopt a more extensive scheme (though be it remembered it is only slightly more expensive than Mr. Oldham's as revised), the participators in the scheme have a less amount to pay, *ergo* the more the Municipality spend on their own supply, the less will the other people pay. Another point to consider is this—that on the principle which was adopted of fixing the amounts due no account has been taken of the distance at which the supply has to be given; thus, if the junction station were twice as far away or half as far away, the amount to be debited to the Railway Company would be practically the same.

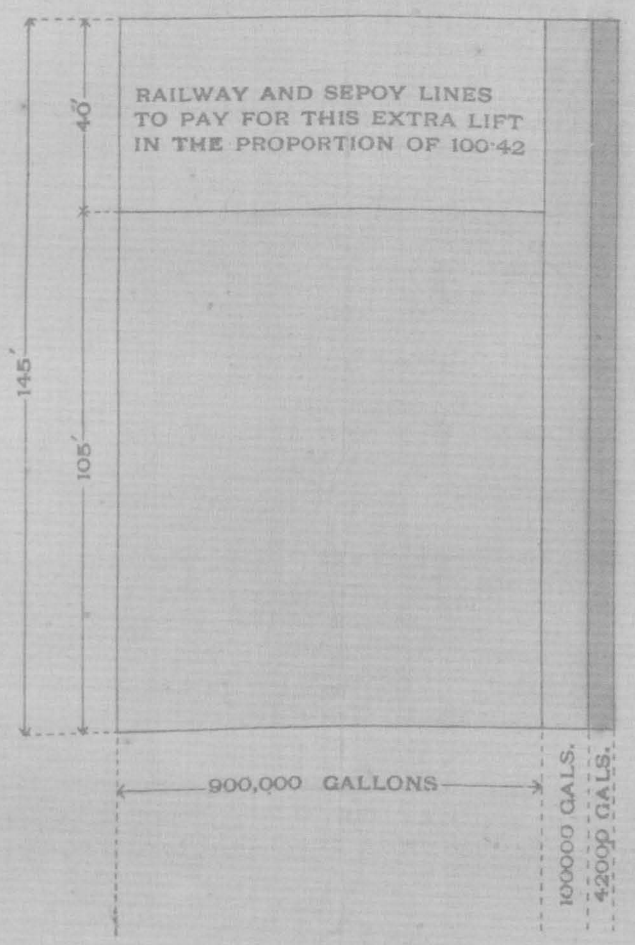
29. Evidently, therefore, the basis on which the allotment of cost was made is an incorrect one, and we must seek some other basis on which to frame the proportionate charges.

30. To find a proper basis, it is necessary to consider first how the question of working charges will stand.

31. These for the new 15 gallons scheme are estimated at Rs. 34,500 * annually. Here, again, it was previously decided that the amounts to be paid should be proportionate to the supply, but the basis of calculation was in this case even more incorrect than in the case of the calculation made for the proportionate initial charges.

32. The cost of pumping depends not only on the amount of water raised but on the height to which it is raised. Now the level at which the Railway Company require the water delivered is the same as that at which it will be necessary to deliver the water to the lines, and on this account the town water has to be lifted to 145 feet at the pumping station, while if the railway and sepoy lines were not included, the lift would be only 105 feet. The cost of this extra 40 feet of lift must therefore be borne by the Railway and the Military Departments in proportion to the quantities with which they are to be supplied, viz., 42,000 to 100,000. In the diagram below the whole enclosed space shows the total quantity of work to be done in lifting the full supply of water, the blue portion shows the work actually required for the town's supply, the red for the railway's supply, and the green for the sepoy line's supply. The portion left white shows the work to be done in lifting the town water to the extra height of 40 feet, due to the water for the railway and sepoy lines

having to be lifted to 145 feet instead of 105 feet as required for the town. The cost of this should be borne in the proportion of 100 to 42 by the Railway Company and the Military Department respectively:—


RAILWAY AND SEPOY LINES TO PAY FOR THIS EXTRA LIFT IN THE PROPORTION OF 100·42
40'
145'
105'
900,000 GALLONS
100000 GALS.
42000 GALS.

33. Taking the quantities arithmetically, they stand thus—

—	—	Daily.	Annually.
		Rs.	Rs.
Town	900,000 gallons, 105 feet high, at 10 annas per million gallons lifted 1 foot high.	59	21,500
Railway and sepoy lines ..	142,000 gallons, 145 feet high .. .. 900,000 do. 40 do.	35·6	13,000
	Total ..	..	34,500
	Out of Rs. 13,000 chargeable to the railway and sepoy lines—		
	The railway pay $\frac{100}{142}$	..	9,000
	The sepoy lines pay $\frac{42}{142}$	..	4,000

34. The working charges as previously estimated for the railway and sepoy lines were Rs. 3,350 and Rs. 1,400, respectively—very much under the amounts actually due—and if it had been possible to adhere to Mr. Oldham's scheme with 180 feet lift as against 145 feet lift, the cost would have been still more.

35. Having shown that the cost of the working charges bear a specific relation to the quantity of water and the height to which it is pumped (and in the lift is a factor of distance, a portion of the lift being due to friction in the mains), it is evident that a somewhat similar relationship should exist in regard to the original proportionate cost of the works, but in this instance the proportions will, as regards

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* *Vide* comparative statement in Appendix A.

certain items, be altered. As to the engine power, the higher lifts still affect the cost as they necessitate engines of greater proportionate power, and hence the proportionate payments must be calculated on the same basis as that used in calculating working charges, so also for the pumping station generally; but in reference to the cost of filtration galleries, the proportion to be charged depends directly on the quantity to be supplied. With regard to pipes, the charges depend on the increased sizes due to the extra supply.

36. The proportionate charges will stand thus—

—	Town.	Railway.	Sepoy line.
	RS.	RS.	RS.
Infiltration works	23,253	2,583	1,084
Engine and boiler house	11,046	4,622	1,942
Engines, boilers and pumps	67,256	28,692	12,052
Pipes	1,79,327	20,900	8,778
Valves and fountains	15,337	1,787	750
Laying pipes	21,944	2,557	1,073
	3,18,163	61,141	25,679
Contingencies including establishment at 12½ per cent.	39,837	7,859	3,321
	3,58,000	69,000	29,000
Total ..	4,56,000		

37. Turning now to the direct pumping scheme providing ten gallons per head for the town, the initial and working charges, as detailed in the comparative statement at the end of this report, would work out and compare as follows:—

—	Town.	Railway.	Sepoy line.	Totals.
	RS.	RS.	RS.	RS.
Ten gallons	2,82,000	69,000	29,000	3,80,000
Fifteen gallons as above	3,58,000	69,000	29,000	4,56,000

while the working charges would be—

—	Town.	Railway.	Sepoy line.	Annual total.
	RS.	RS.	RS.	RS.
Ten gallons per head scheme	14,500	7,000	3,500	25,000
Fifteen gallons per head scheme	21,500	9,000	4,000	34,500

38. It may be said that there should be no increase of working charges to the Railway Company and the Sepoy Lines, because the Municipality choose to supply 15 gallons per head to the town instead of 10 gallons per head; but I would remark that the participators ought to have their proportionate payments fixed with due regard to necessities of the town, which I consider will not have been met until a supply of 15 gallons and not less has been secured for its population. I do not see on what grounds the Railway Company or the Military Department could seek to limit the town supply to 10 gallons per head, and the extra charges for a 50 per cent. increased supply of water to the town is so small when compared with that increase that I advise the adoption of the 15 gallons per head scheme. Even this is a limited quantity when it is borne in mind that arrangements have now to be made to supply Madras with 25 gallons per head.

39. Supposing then that the 15 gallons per head scheme is adopted and calculating the probable charges to the Municipality as calculated in the Chairman's letter, embodied in G.O., dated 19th May 1890, No. 808 M. (page 2), we find them thus—

	RS.
Proportion of initial cost to be borne by Municipality	3,58,000
Deduct half grant by Government	1,79,000
	1,79,000
Deduct savings available	15,500
What the Council will have to borrow	1,63,500
The yearly sum required to clear off this amount in 30 years with interest at 4¼ per cent. will be	9,713
Add proportionate working charges	21,500
Total annual cost to the Municipality for 15 gallons scheme ..	31,213

which is Rs. 3,100 per annum more than the scheme as originally estimated.

40. I have casually alluded to the fact that so far as the pumping main is concerned, it has been designed of a size to allow of a supply to Woriyur and Puttur districts of Trichinopoly. These districts require the supply as much as, if not more than, the fort, being further from the river. The distribution pipes to these districts will cost Rs. 72,500, but they can be added at any time; extra power will be required at the pumping station, and in the designs for the building it is arranged so that it can be extended. The distribution pipes proposed to be eventually laid in the above districts are shown in dotted lines on the plan of the town.

41. In none of the schemes alluded to has any account been taken of the probable cost of keeping the works in order, and to allow of due comparison I have also omitted this item. The cost of depreciation of machinery is included in the pumping charges, but the maintenance of pipes and valves is not so.

42. I note that it is proposed (*vide* G.O., dated 19th May 1890, paragraph 3) to levy water-tax only on the portion of the town to be actually supplied, but as portion of the work (the main, &c.) will be for the ultimate benefit of Puttur and Woriyur and as the scheme will be ultimately extended to those districts, I suggest that a reduced tax—say, of 2 per cent.—might be levied in those districts. A similar course is pursued in Madras; this might meet the extra charge of Rs. 3,000.

43. I herewith forward the following plans for the revised scheme:—

(1) Filtration gallery.
(2) Pumping house.
(3) Plan showing position of mains and fountains.
(4) Enlarged plan near pumping station.
(5) Section showing the hydraulic pressure available on each main.

44. At the end of this report will be found (1) a comparative statement of the cost and the capitalised cost of each of the various schemes herein referred to, No. 5 scheme being the scheme I recommend for adoption; (2) a report regarding the experiments made in the river bed and showing the method of determining the length of the filtration gallery.

45. I mark this letter urgent as Government have directed the commencement of the works during the present season, except as regards preliminary work that, perhaps, may not be possible, as most of the materials for the work have to be got from England.

ORDER—dated 4th May 1891, No. 671 M., Local and Municipal.

In the letter read above, the Sanitary Engineer submits a detailed report on the Trichinopoly water-supply scheme, which was originally drawn up by Mr. Oldham in 1888. The report, which is admirably clear and reflects great credit upon Mr. Jones, shows that the scheme originally contemplated has been seriously under-estimated, and the Sanitary Engineer proposes in lieu thereof two alternative schemes—one for supplying 10 gallons per head to the population of the town at an initial cost of

Rs. 3,80,000, and the other for supplying 15 gallons per head at a cost of Rs. 4,56,000. The latter, although the more expensive, is far preferable both to the former and to Mr. Oldham's revised scheme and is that which should be adopted. The date on which the experiments for testing the supply of water available from the Cauvery bed were made has not been stated, but it is presumed that this was during February or March. If so, it is probable that the abnormal rains which fell during these months may have affected the flow, and it is therefore desirable that further experiments should be conducted before the results obtained are finally accepted as accurate.

2. The scheme recommended by the Sanitary Engineer will now be referred to the Chief Engineer for scrutiny and early remarks. As the expenditure involved will be much more than was originally anticipated, the papers will also be communicated to the Municipal Council, Trichinopoly, for very early consideration and for suggestions with reference to the question of defraying the initial outlay and working expenses. It is observed that the latter amount to Rs. 34,500 per annum, no allowance being made for repairs of pipes, fountains, &c. Taking these into consideration, the total annual charges will probably be about Rs. 40,000. The Government will be prepared to make a grant from Provincial funds of half the initial cost of the scheme and to advance the remaining amount required at 4¼ per cent., repayable in 30 years. No proposals having been made for piping the suburbs of Puttur and Woriyur at present, water-tax should not be levied in these portions of the town. The shares of the initial outlay and of the working expenses debitable to the Military Department and the South Indian Railway Company, as calculated by the Sanitary Engineer; have the approval of Government, and the papers will be referred to the Railway Company and Military Department for their opinion with the request that their shares of the capital cost may be placed at the disposal of the Municipal Council as soon as possible.

3. In this connection, the advisability of introducing a Bill for the enhancement of the maximum rate of taxation on buildings and lands and of the water-tax prescribed in section 47 of Act IV of 1884 will be considered in the Legislative Department.

(True Extract.)

J. F. PRICE,
Chief Secretary.

To the Sanitary Engineer.
" Chief Engineer, Public Works Department,
with plans and estimate.
" Municipal Council, Trichinopoly,
through the Collector.
" Military Department.
" Public Works Department (Railway Branch).
" Legislative Department.
" Financial Department.

Exd. C. A. Munisawmy.

44

Govt. of {1891} Madras.

LOCAL AND MUNICIPAL.

Issued

Recd.

Encl.

G.O., 4th May 1891, No. 671 M.

MAY.

Water-supply.

Referring, with remarks, to the Chief Engineer, Public Works Department, for scrutiny, the revised scheme of — for the town of Trichinopoly recommended by the Sanitary Engineer; communicating the papers to the Municipal Council for suggestions as to how the increased initial outlay and working expenses can be met; requesting the Military Department and the South Indian Railway Company to place their shares of the capital cost at the disposal of the Council as soon as possible; and stating that the advisability of introducing a Bill for the enhancement of the maximum rate of taxation on buildings and lands and of the water-tax prescribed in section 47 of Act IV of 1884 will be considered in the Legislative Department.

---

2 abstract

G.O.

24th July 1891, No. 1151 M., Local and Municipal.

GOVERNMENT OF MADRAS.

LOCAL AND MUNICIPAL DEPARTMENT.

Read—again the following paper :—

G.O., dated 4th May 1891, No. 671 M., Local and Municipal.

Abstract.—Referring, with remarks, to the Chief Engineer, Public Works Department, for scrutiny, the revised scheme of water-supply for the town of Trichinopoly recommended by the Sanitary Engineer; communicating the papers to the Municipal Council for suggestions as to how the increased initial outlay and working expenses can be met; requesting the Military Department and the South Indian Railway Company to place their shares of the capital cost at the disposal of the Council as soon as possible; and stating that the advisability of introducing a Bill for the enhancement of the maximum rate of taxation on buildings and lands and of the water-tax prescribed in section 47 of Act IV of 1884 will be considered in the Legislative Department.

Read—also the following papers :—

From J. A. JONES, Esq., MEM. INST. C.E., F.R.S.E., Sanitary Engineer to Government, to the Chief Secretary to Government, dated Fort St. George, 24th June 1891, No. 684.

With reference to the remark made in paragraph 1 of G.O., dated 4th May 1891, No. 671 M., Local and Municipal, I have the honour to make the following explanation.

2. The experiments, as presumed by Government, were made after the abnormal rains on the 3rd March 1891 as stated in paragraph 3 of the report, but I propose to show to Government that a decreased flow and hence a low water level does not, except beyond certain limits, affect the calculations made for determining the length of the gallery.

3. It will be noticed that that length was fixed on the datum that the difference between the water level outside and inside the gallery is to be 18", and when that is the difference of head, the maximum (which is double the average) supply is obtained. Therefore, so long as this head is available, the calculated length of the gallery is ample, nor, until the head or height of water above the suction pipe becomes less than a calculated head of 5·0 feet, will the supply be insufficient; (I need not enter into details as to how this figure is arrived at).

4. It might be imagined that, on this basis, no account has been taken of a diminished flow in the bed, but the sand in all cases when saturated, that is the portion below water level, will contain per cubic foot the same amount of water, and the effect of an additional amount of water would be to raise the level of water in the sand bed and not to add more water per cubic foot of sand; hence so long as our calculations are based on the difference between the head outside and inside the well and that head can be maintained, the deductions will so far be correct.

5. The yield from a saturated sand bed flowing into a well depends on the permeability of the stratum, its area and the porosity of the material forming the walls of the filtration well or gallery; hence it may be imagined that an exact calculation of the flow, even after experiments and the determination of a co-efficient for the permeability of the sand bed and porosity of the trial well combined, is not an easy one.

6. The main point to consider now is what is the lowest level to which the water in the sand will fall. I have had, since the experiments, the varying surface level of that water recorded, and since the date of the experiments (this was on the 8th April, since which the water has been rising) the total fall has not exceeded 12″. That fall still left a margin of 1′ 10″ supposing the difference of level or head of 18″ continued to be maintained. After the water falls to this level, the head will have to be gradually increased, but not until, as stated above, the water outside reaches to a point 5·0 feet above the bottom of the culvert (which point is 2 feet 7 inches below the lowest level yet recorded) will the maximum supply fail to be accorded, because the water inside will still continue to keep the 18″ pipe to the pump full. If the record shows that the water falls lower than will afford a safe margin, the gallery will have to be lengthened, but this extra length can be determined only when we know the lowest point to which the subsoil water falls.

7. I am continuing the registration of the levels, and this will be carried out as far as possible until the construction of the gallery is begun.

8. While the results of this record will allow the length or level of gallery to be fixed theoretically, I am of opinion that, until the gallery is actually constructed and its own particular co-efficient of flow determined, it will be a matter more or less of conjecture as to the exact length to be required. The length in the estimate is just what is required as far as could, with the then available information, be judged. An extension of the gallery can be undertaken at any time.

Note by the Acting Chief Engineer, Public Works Department, dated June 22nd, 1891.

Read—Proceedings of the Local and Municipal Department, No. 671 M., dated 4th May 1891.

In the Proceedings quoted above, the Sanitary Engineer's report on the Trichinopoly water-supply scheme, originally drawn up by Mr. Oldham, is reviewed. The Government accepts the modified scheme proposed by Mr. Jones which provides for a supply of 15 gallons per head at a cost of Rs. 4,56,000. This scheme is referred to the Chief Engineer for scrutiny and remarks.

2. The Sanitary Engineer takes exception, it is observed, to the rates adopted by Mr. Oldham, but as he gives no details, the different rates cannot be compared. But for a not very great difference in cost, the Sanitary Engineer provides for 15 gallons per head as against only 10 gallons allowed by Mr. Oldham. This is an important advantage in favour of Mr. Jones' proposals.

3. The principal difference between the two schemes is that Mr. Oldham provided a service reservoir, while the Sanitary Engineer relies on direct pumping. The use of a service reservoir is undoubtedly the most satisfactory method of distributing the supply, but as in this case the cost of one would be very great, and the scheme as modified is efficient, it is thought that the proposals of the Sanitary Engineer may be accepted. His estimates are not given in detail. They cannot, therefore, be scrutinised.

Endorsement, dated 24th June 1891, No. 436-D.

Transferred to the Local and Municipal Department, with reference to orders in that department, No. 671 M., dated 4th May 1891.

(Signed) A. C. SMITH, Lieut.-Col., R.E.,
Ag. Joint Secy. to Govt., P.W.D.

Order—dated 24th July 1891, No. 1151 M., Local and Municipal.

The scheme of water-supply for the town of Trichinopoly, which is estimated to cost Rs. 4,56,000, is sanctioned.

2. The reports called for from the Municipal Council and from the Military and Public Works (Railway Branch) Departments in the Government Order read above should be expedited.

(True Extract.)

J. F. PRICE,
Chief Secretary.

To the Sanitary Engineer, with plans and estimates.
„ Public Works Department (Railway Branch).
„ Military Department.
„ Municipal Council, Trichinopoly, through the Collector.

Govt. of {1891} Madras.
LOCAL AND MUNICIPAL.

Issued

Recd. *Encl.*

G.O., 24th July 1891, No. 1151 M.

JULY.

Water-supply.

Sanctioning, with remark, the scheme of — for the town of Trichinopoly, which is estimated to cost Rs. 4,56,000.

50 ✓ Encl 762/91

Local & Municipal Dept
CURRENT No. 2560 M

1891.

From

The Sanitary Engineer
to Government,

To

The Chief Secretary
to Government
Local and Mun^l. Dept

No. 1371

Dated 1st }
Despd. 1st } October 1891.
Recd. 1 Oct. 91

Enc. –

Subject.

States that the Trichinopoly Water Supply Scheme can be extended to supply the Jail without increased lift at the pumping Station.

H.E. & the Hon. Mr. Garstin
P.S.

order

The proposals of the Sanitary Engineer for supplying drinking water to the Trichinopoly Jail & ~~the~~ redistributing the cost ~~water~~ of the Trichinopoly water-supply scheme between the Municipality, the Military Department, the South Indian Railway Company & the Jail Department have the approval of Govt.

MSB
16.10.91.

17 Oct.

20 Oct.

To The Sanitary Engineer
- Municipal Council, Trichinopoly thro' the Collector
- Military Dept.
- Public Works Dept (Ry Branch)
- Judicial Department.
- Financial Department

Note

It is submitted that final orders on the scheme may be passed when replies from the Mily & P.W.D. have been received. The Mily Dept has it is understood addressed India on the subject & the P.W.D. has been reminded two or three times already. The papers in the linked file may therefore be held over until materials are available for finally sanctioning the scheme. The grant on account of the Jail may be made from Provincial Funds along with the general grant ~~from~~ in aid of the scheme.

MSB
16.10.91.

20/10

To the U.S. Judicial Dept for [illegible]

I think it is better to send out an interim order on this & the linked file together so that the whole case may be intelligible [illegible]

59

7P

Form A.

No. 1371

Government of Madras.

Office of Sanitary Engineer,

Fort St. George, 1st October 1891.

Local & Municipal Dept
CURRENT No. 2560

From

J. A. JONES, Esq., Mem. Inst. C.E., F.R.S.E.,
Sanitary Engineer to Government,

To

The Chief Secretary to Government
Local and Municipal Department

Sir,

In reply to your memorandum dated 16th September 1891 No. 762 referring to me the consideration of the question as to whether the Trichinopoly water supply scheme cannot be extended to supply the Jail, I have the honor to report that it is quite possible to do so and that without necessitating any increased lift at the pumping station.

2. A branch to the Jail can be taken from the branch which is intended to supply the Railway (Junction) Station and Sepoy Lines adjacent and will pass along the

Pudicottah Road direct to the Jail - The branch will consist of 5000 feet of 4" and 5750 feet of 3" pipes with the necessary valves, fittings &c and the water will be delivered at the rate of 15,000 gallons daily or 15 gallons per head (and during hours at double this maximum rate) and at a pressure of about 0 feet at the jail. The necessary hydraulic gradient demands these izes of pipe and no reduction can be made in this respect.

3. To the Trichinopoly scheme here are already three contributors, he Jail Department will be a fourth and it is only right that it should bear a proportion of the cost of the scheme. The supply to he jail is so small that in some ases it has been difficult to arrive t the exact proportion payable y the Jail. The following statement shews as nearly as can be alculated what proportion that ill be and by comparing this statement with the original Statement (Vide para 36 of my letter printed alon with G. O of 4th May 1891; No 6 of 1 M Local and Municipal) it will be see that the inclusion of the Jail is advantageous to a small extent to all the original subscribers.

	Town.	Railway	Sepoy Lines.	Jail.
	Rs	Rs	Rs	Rs
Infiltration works	22,922	2,547	1,069	382
Engine and boiler house	10,927	4,334	1,817	532
Engine, Boiler and Pumps	67,031	26,550	11,150	3,269
Pipes	1,77,585	20,720	8,700	2,000
Valves and fountains	15,185	1,769	740	18
Laying pipes	21,724	2,532	1,063	25
	3,15,374	58,452	24,539	6,61
Contingencies at 12½ per cent	39,626	7,368	3,091	83
48,000	3,55,000	65,820	27,630	7,55
As against previously	3,58,000	69,000	29,000	〃

4. As regards pumping charges the Municipality will not benefit by th inclusion of the Jail but the other tw contributors will as the Jail will now share in lifting the town's water th

entr

xtra 40 feet (Vide para 33 of my letter bove referred to).

The pumping charges will be nodified as shewn below.

		Previously		Now
		Daily	Annually	Annually
		Rs:	Rs:	Rs:
Town	9,00,000 gallons 105 feet at 10 annas per 1 million gallons 1 foot high	59	21,500	21,500
ailway	1,42,000 gallons 145 feet	35·6	9,000	.
epoy Lines	9,00,000 gallons 40 feet		4,000	.
ailway poy Lines Jail	1,57,000 gallons 145 feet 9,00,000 gallons 40 feet		.	13,410
	The Rs 13,410 will be divided as follows:—			
	Railway $\frac{100}{157}$ =			8,542
	Sepoy Lines $\frac{42}{157}$ =			3,587
	Jail $\frac{15}{157}$ =			1,281

his will represent a saving annually o Railway of —————— Rs 458
nd to Sepoy Lines of —————— " 413

The cost of the works which ill appertain to the Jail alone will be s follows:—

	Tons
000 feet of 4" pipes ——	39·10
5750 feet of 3" pipes ——	34·15
	74·5

Add

Add for deviation in weight and breakage —————— 5·5

Tons 80·0 at Rs 125 = Rs: 10,000

Laying and jointing pipes at Rs 15 per ton —————— 80 tons at Rs 15 = " 1,200
5 —— 4" valves complete —————— = " 250
5 —— 3" valves —— " —————— = " 175
1 Branch pipe 9" + 4" —————— = " 20
Total —————— 11,645
Add 12½% —— 1,455
Total —————— 13,100

Nothing has been put in the estimate for distribution works inside the jail their cost will be small and they can be arranged for at any time.

7. The total cost of the works will therefore be represented by a payment of Rs 20,650 and an annual expenditure of Rs 1,280. The two sums together represent little more than 6 annas per 1,000 gallons of water to be supplied.

In connection with this matter I would refer Government to my No. $\frac{1288}{18.9.91}$ in connection with

Sheet 834
1-10-91

with the supply to Coimbatore Jail. I feel assured that it will be better to provide a supply by an extension of the town water works than to depend on such an unsatisfactory and doubtful source of supply as a gathering area will be.

I have the honor to be,
Sir,
Your most obedient Servt.

Sanitary Engineer to Govt.

Reply [illegible] 1573 [illegible]
22.9.91

108
57

No. 1458

South Indian Railway,
AGENT'S OFFICE,
TRICHINOPOLY, 15th September 1891.

From
The Agent,
SOUTH INDIAN RAILWAY,

To
The CONSULTING ENGINEER FOR RAILWAYS,
MADRAS.

Sir,

Your No. 1154 of the 17th ultimo. I have the honor to state that I am not prepared, for the reasons stated in the ~~follow~~ following copy of a report which I have received from the Acting Chief Engineer, to accept on behalf of the South Indian Railway Company, the terms proposed in Mr. Jones' modified scheme for the supply of water at Trichinopoly.

"In the water supply scheme as first proposed "and estimated by Mr. Oldham, the quantity of water to be "supplied to the Railway Company was 100,000 gals and as "the whole of the supply for Town, Railway and Military "requirements was to be raised to the same height a charge "proportional to the quantity of water required for each section "was the proper division of the Estimate. The quantity pro-"vided per head of population was then fixed at 10 gals: "and as the estimate framed by Mr. Oldham for construction "and working shewed that the supply to the Railway by a "joint scheme could be obtained at a less cost than "by the Railway carrying out their own work, the Chief "Engineer gave his opinion in favor of the joint scheme. "Mr. Jones now points out that the Reservoir Project was

much under estimated, it is most probable that Mr Logan
would have adhered to his original decision in favor of the Rail-
way carrying out their own work had the work been then esti-
mated to cost 4½ lacs of Rupees.

"The proposal of Mr Jones for direct pumping affects the
"cost of working and as sufficient power must be maintained
"to pump up to 145 ft. instead of 105 ft as required for town
"purposes, his argument that the Railway and cantonment
"should pay for the extra cost of pumping is a fair one. I do not
"agree with him, however, that the Railway should be called upon
"to pay a proportionate portion of the initial charge for the extra
"cost of enlarging the pipes and other works to provide 15 gals,
"a head to the Town. This supply has nothing to do with the
"Railway. The Town Supply might have been fixed at 20 gals
"or more and the same argument would have applied.

"The Railway require 100,000 gals a day and for this is
"prepared to pay - but if the cost of the joint Scheme makes the
"figure to be paid by the Railway Company more than we could
"carry out our own Separate Supply for, the only inducement for
"joint action is done away with.

"My own opinion is that the Railway Company had
"much better carry out their own water supply. Several years have
"already been wasted. In March 1888 the approval of the Board was
"obtained to the expenditure of Rs 58,000/- for a direct supply from the
"Cauvery and if this had been put in hand, we should have had by
"this time an unfailing source to draw from. The discussion on
"the Town Scheme may continue for years and the prospect of a
"good supply of water to the Junction Station indefinitely
"postponed."

I have the honor to be
Sir
Your most obedient Servant
Walter J. Hooper
for Agent

Sm 1795

From
The Agent,
South Indian Railway,
Trichinopoly.

To
The Consulting Engineer for Railways,
Madras.

Dated 15th September 1891
Received
No. 6458
Enclosure.

Form No. 69.

Copy of a communication to the Agent,
South Indian Railway
from the Consulting Engineer for Railways, Madras,
No. 1376, dated 23rd September 1891.

In Continuation of my letter No. 1373 dated 22nd Septr. 91. I have the honor to suggest if it would not possible to arrange for the water required by the railway being delivered by the Municipality into a small reservoir at a height of 105 feet above the pumping station, the railway making its own arrangements for lifting the additional 40 feet required for the railway service. As such an arrangement would possibly enable existing pumping appliances to be utilized and a storage reservoir only 40 ft × 40 ft × 10 ft would hold a days supply. The cost of this scheme might be less than a separate arrangement

The plan now suggested at any rate appears more desirable than that put forward by Mr. Jones, where in addition to the heavy first cost the railway have to pay apparently Rs 5,824 a year for raising municipal water. It is presumed that under this scheme the railway would only pay according to consumption proportion pure and simple.

M. Coulthe
Captain R.E.
for Cong: Engr. for Rys

E.4
Pd 16/3/91

SANITARY ENGINEER
R. 2=1795
12 [illegible] 911

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all papers sent
to D2. Mi.
10
61

No. 1685

South Indian Railway,
AGENT'S OFFICE,
TRICHINOPOLY, 28th October 1891.

12 P

From
The Agent,
SOUTH INDIAN RAILWAY.

To
The CONSULTING ENGINEER FOR RAILWAYS,
MADRAS.

Sir,

Your letter No. 1376 of the 23rd Ultimo. I forward for your information the following copy of a report which I have received from the Acting Chief Engineer, in which I concur:—

"I enclose a copy of the estimate for the "separate water supply from the river "Cauvery amounting to Rs 57,742/ but to "this I find in later correspondence Rs 2,000/- "were added to carry the take off from "the Cauvery beyond the confluence of the "Kodamurety making the total estimate "Rs 59,742/- in round figures 60,000/-. I "have gone through the figures of this estimate. "The rate put down for piping is too low & "the estimate would have to be increased "by Rs 9000/- making a total of Rs 69,000/-

"What I meant to convey in "the para of my letter referred to by the "Consulting Engineer is that as the cost of "machinery and pumping to raise the "900,000 gallons to the 142 feet height

"will be greater than that for the Supply
" of 600,000 gallons. I do not agree that the
" Extra Cost of raising the 300,000 gallons
" 142 feet Should be Charged to the
" Railway."

"There are no details of the Estimate
" for direct pumping the 600,000, but taking
" the Same proportions as per the Estimate
" for 900,000 gallons, the Capital Cost to the
" Railway Should be about 60,000 & the
" working Charge 7200/- per annum. This
" latter figure does not I understand
" include interest on the Capital Expendi
"-ture and would have to Compare with
" the working Expenses as given by the
" Locomotive Superintendent of Rs 3750/-
" per annum. So that to join Mr. Jones
" Scheme the Company would be put to an
" annual Charge of over Rs 5000/- for
" working Expenses above what we Could
" ourselves do the work for with our own
" Separate Supply."

"The Suggestion of the Consult
"-ing Engineer that we Should take the
" Municipal Water at the 105 feet level
" and do the rest of the pumping ourselves
" would, if Carried out been a Satisfactory
" one, but I Cannot Say whether Railway
" Company Could accept it until I know
" what the price per 1000 gallons delivered
" by the Municipality would be. the

From

THE AGENT,
South Indian Railway,
Trichinopoly.

To

THE CONSULTING ENGINEER FOR
RAILWAYS,
Madras.

Dated }
Received } 189

No.

ENCLOSURE.

1/3 3 abstract

Local & [illegible] al Dept

2124 L

92

Read also the following papers:-

1151 L 24-7-91 [illegible]
1077 L 24-7-91 [illegible]
671 L 6-5-91
377 L 13-3-91

1891.

DEPARTMENT

From
The Collector of
TRICHINOPOLY.

To
The Chief Secretary to Government,
Local and Municipal Department,
Fort Saint George.

Dated 19
Despatched 19 } August 1891.
Received 20 AUG. 91
No. 15
ENCLOSURES 1

Abstract

Forwarding with remarks the letter from the Chairman Municipal Council, Trichinopoly, suggesting ways and means for the additional sum required for carrying out the water scheme, as revised by the Sanitary Engineer.

1486

"The Existing pumping Station at the "Wyacondan could be utilised by the "Construction of a cistern to hold a "days Supply. The Locomotive Superin"-tendent's Estimate for pumping from "the Wyacondan Channel is Rs 2500/- "per annum and 7½ per Cent in the "Estimate of Rs 69,000 less the Cost of "the New tank at Trichinopoly which "in any case must be Constructed "amounts to Rs 4150/-"

"The Cost of the Pumping 100,000 "gallons 105 feet high at 10 annas per "million gallons one foot high, amounts "to Rs 2400/-"

"If therefore the Municipality "will Supply us with 100,000 gallons a "day at the Wyacondan pumping "Station at a Cost not Exceeding "Rs 6500/- it would be a no more "costly arrangement to the Railway "Company than that our Scheme would "be viz:-"

"Pumping from Cauvery	Rs 3750
"7½ per Cent on Expenditure of 69000 "	4975 wrong 5175 "
	Rs 8725 "

I have the honor to be
Sir
Your most obedient Servant
Walter F. Hooper
for [illegible]

Enclosure one.

REGISTER
No. 1464

SANITARY ENGINEER
Recd. No. 1775
12 NOV 91
THE GOVERN…

From
The Agent,
South Indian Railway,
Trichinopoly.
The Consulting Engineer for
Railways,
Madras
Dated 28th October 1891
Received
No. 1685
Enclosure

69/158

Form No. 1.

Public Works Department.

Office of Consulting Engineer for Railways,
Madras, 3rd November 1891.

Letter from the Agent, South Indian Railway, No. 458 dated 15th September '91.
— Do — No. 1685 dated 28th October 1891 with an estimate & a plan.
Copy of letter from the Consulting Engineer for Railways, Madras No. 1376 dated 23rd September 1891

No. 968

Submitted to Government, with reference to G.O. 1409 R dated 19th June 1891.

Subject.

2 The report by the Sanitary Engineer on the revised Scheme for the Trichinopoly water Supply was referred to the Agent, South Indian Railway and that officer acting on the advice of the

officiating Chief-Engineer is not prepared to accept the modified proposals.

3. The question of Railway participation in the Scheme is dependent on whether the cost of joint action is more or less than that of the separate arrangement, and as the proposals of the Sanitary Engineer would throw an additional annual charge of more than 5,000 Rs on the South Indian Railway they cannot be accepted.

4. I gather from Mr Jones

Mr Jones' report that he considers the railway should derive no benefit from the reduced cost per foot-gallon resulting from the adoption of a direct pumping scheme but on the contrary the Railway should bear the extra cost of a 15 gallon over a 10 gallon supply. With these conclusions I cannot agre . If the foot-gallon cost of the whole scheme is reduced, surely all the participators should share the advantage, and it must be remembered that if the Municipality are spending more on their own supply they are getting 50 per cent more water for the extra expenditure. The increase in supply from 10 to 15 gallons per head is solely for the advantage of the Municipality, and although very desirable, there is no reason why any portion of the additional cost should be borne by the South Indian Railway. It would also appear that if the first cost of the 15 gallons

Scheme

Scheme is estimated at Rs 69000 for the railway share, some reduction must result by adopting the 10 gallons per head supply. With regard to the distribution of proportionate charges, the railway share under "Pipes" and "Laying pipes" appears to be calculated on consumption proportions. This division seems hardly equitable when it is remembered that the Municipality requires a considerable length of the distributary piping from which the railway obtain no

Service

, the latter requiring only a main pipe

5. The weak point in Mr Jones' Scheme is the needless lifting of the Municipal water through a height of 40 feet. The only party to the joint arrangement who could possibly derive any advantage from the lift is the Municipality to whom the extra head would be useful in enabling the water to be delivered at a greater pressure. Using Mr Jones' basis of Calculation, the railway would have

to

to pay annually Rs 5783 for raising Municipal water and Rs 3308 for their own supply.

6. Having in mind the advantages that should accrue to all parties in the joint Scheme under suitable Conditions of design and division of Charges. I suggested to the Agent, South Indian Railway, a proposal to take delivery of the railway water at a height of 105 feet. I now learn that provided the Cost of such an arrangement does not exceed that of the separate Scheme,

the chance of friction between the participating parties is done away with. In addition, it is probable that in actual working the difference in annual cost would be more accentuated than is shewn in the Statement, and that less delay would occur in providing the Railway with a very necessary water supply

8. I consequently recommend that the South Indian Railway withdraw from the joint Scheme, and undertake the provision of a Separate Supply

M. Coutalle

Captain R.E.

for Cons: Engr for Rys

P.W. Current No. 11613.

Form No. 3.

From

THE CONSULTING ENGINEER

FOR RAILWAYS,

Madras.

2979/ca

No. 1409 R. d/ 19-6-91
" 1823 R. " 8-8-91
" 4201 C. " 23-9-91.

C/

No. 4933 C d/ 7th Novr. 1891

NOP

05 NOV 91

No. 968
Dated 3rd
Received 4th
November 1891.

Transferred to the Local and Municipal Department with reference to G.O. 4th May 1891, No. 641 M., in view to these papers being referred to the Sanitary Engineer for remarks.

J. W. Cooke Lt. Col. R.E.
for Secy. to Govt. P.W.D.
Ry: Branch.

No. of Enclosures. 5
(1 Plan)

Subject.

Submitting the report of the Agent, S. I. Ry: on the revised scheme for the water supply at Trichinopoly.

SANITARY ENGINEER
No. 1795
12 NOV 91
TO THE GOVERNMENT

[9]

LOCAL AND MUNICIPAL DEPARTMENT.

2979/[illegible]

From

The P. W. Department.

No. 4933 C.

Dated 7-11-91.
Received 10-11-91.
Enclosures 5 [illegible]

SUBJECT.

Transferring for reference to the Sanitary Engineer for remarks, letter from the Consulting Engineer for Railways, Madras, submitting the report of the Agent S. I. Railway on the revised scheme for the water supply at Trichinopoly.

For

(with an endorsement)

C.S.

22 P

No 1006

Referred to the Sanitary Engineer for very early remarks.

(By order)

Ag Assistant Secretary.

F.P.
10/11/91

Fort St George
10th November 1891

To the Sanitary Engineer.

SANITARY ENGINEER TO THE GOVERNMENT OF MADRAS
Rec 1775
12 NOV. 91

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69 22 P

FORM A.

No. 1741

GOVERNMENT OF MADRAS.

OFFICE OF SANITARY ENGINEER,

Fort St. George, 19th November 1891.

From

J. A. JONES, ESQ., MEM. INST. C.E., F.R.S.E.,
SANITARY ENGINEER TO GOVERNMENT,

To

The Chief Secretary to Government
Local and Municipal Department.

SIR,

In reply to reference No 1006 dated 10th November 1891 I have the honor to reply as follows:—

2. The suggestion made by the Consulting Engineer for Railways that the Trichinopoly scheme might be so modified that the water should be delivered to the Railway Company at a pressure due to the lift of 105 feet, which is the lift required for the town alone, was considered by me when drawing out the scheme and the reasons why I did not put this alternative scheme before Government were (1) th

eme would be slightly more expensive to he Municipality (2) that the Sepoy Lines near the Railway Station also demanded the higher lift & (3) that it was advisable for many reasons to avoid a second pumping station, Staff &c.

3. But in view of the possible withdrawl of the Company from the scheme I think everything ought to be done to secure the Company's co-operation and that the scheme with the double pumping station is more economical for the Railway will be shewn in the following remarks:-

4. Should the Railway withdraw Government have still to consider the supplies to the Military Lines and the Jail which, I shall presume, throughout this report, will now be a party to the scheme and which inclusion (Vide mem. No 1371 of 1st October 1892

Ext 25 feb 9

would

would reduce the Railway Company and Military contribution even without the reductions which it will be shewn ~~will~~ can still be effected.

5 As the Sepoy Lines and jail require the higher lift I propose that the Railway Company should under the arrangements now to be detailed still have its water delivered 23 feet above rail level at the Junction Station and I will shew that this can be done at almost the cost which the Consulting Engineer in his No 968 dated 3d November 1891 para 6 anticipates would be the cost of delivering the water at the reduced level available with the lift of 105 feet at the Cauvery. If my figures are accepted I trust the Railway Company will find it still possible to remain copartners in the scheme.

6. As other two bodies besides the Railway Company have to be supplied I propose that the secon

pumping station should still be a Municipal one.

7. It has been assumed, it is thought, by the Consulting Engineer that the Railway Company, if the town water was delivered with head due to the lift of 105 feet, would — require to lift only the extra 40 feet but the lift will be more than this. The rail level near the Wycondah Channel according to the datum assumed in our plans is 378·00 and it may be assumed that the water in the reservoir proposed to be constructed can be maintained at a level of 374·00. The level to which the water must be raised to deliver it to the Railway at 23 feet above rail level at the Junction Station (and this lift is necessary for the Jail and Military Supplies) is 434·00 so that the lift at the Wycondah Channel where the subsidiary Pumping Station will be placed will be 60 feet and not 40 feet. It might be remarked that in such case the original lift of 105 might still be reduced but the water must be delivered with pressure for the portions of the town north of the Wycondah subsidiary pumping station where a ridge has to be crossed. X

8, On such basis then the following calculations have been made:

The supplies required to be pumped at the Cauveryare

Town — 900,000 gallons in 24 hours
Railway — 100,000 — do —
Military — 42,000 — do —
Jail — 15,000 — do —
Total — 1,057,000 — do —

and the maximum supply demanded $= \frac{1,057,000}{2} =$ 528,500 gallons in six hours or 1,469 gallons per minute and the horse power required will be

$$\frac{1469 \times 105 \times 10}{33,000} = 47$$

$$\text{Add } 80\% = \underline{37}$$

$$\text{Total } \underline{84}$$

keeping one engine in reserve 3 engines of 42 H.P = 126 H.P at Rs 600 = Rs 75,600.

The cost of these engines will now be distributed in exact proportion to the supply demanded as the lift is the same for all parties or in the proportion of

	Town	Railway	Military	Jail
Proportions	900	100	42	15
Cost. Rs	64,370	7,150	3,000	1,080

at the subsidiary pumping station the amount to be pumped will be

* Town	109,440	in 24 hours
Railway	100,000	do
Sepoy Lines (one set only)	21,000	do
Jail	15,000	do
Total	245,440	do

---

* Note. There are eight fountains placed on Railway Branch and it is for the supply of these that the Municipality has to pay at the second pumping station.

will be

$\frac{245,440}{2}$ = 122,720 gallons in six hours or 340 gallons per minute.

The Horse Power required at the Subsidiary station will be

$$\frac{\overset{\text{gallons}}{340} \times \overset{\text{feet}}{60} \times \overset{\text{lbs}}{10}}{33,000} = \text{say } 6$$

$$\text{Add } 80\% = \text{say } \underline{5}$$

11 but say 12 H.P.

and 3 engines of 6 H.P would be required costing Rs 10,800.

The cost is distributable in the following proportion viz that of consumption

	Town	Railway	Military	Jail
Proportions	109.4	100	21	15
Cost. Rs.	4,830	4,390	930	650

The total cost of the machinery to each party will then be

	Town	Railway	Military	Jail
	Rs	Rs	Rs	Rs
Main pumping station	64,370	7,150	3,000	1,080
Subsidiary	4,830	4,390	930	650
Total	69,200	11,540	3,930	1,730
As compared with amounts in statement in my letter No 1371 dated 1st October 1891	67,031	26,550	11,150	3,269
Increase or decrease	+2,169	-15,010	-7,220	-1,539

The following will be under the new condition the cost of pumping

	Main station.		Subsidiary station.		Total annually
	Gallons daily	Rupees annually	Gallons daily	Rupees annually	Rs
Municipality	900,000	21,900	109,440	1,591	23,49
Railway	100,000	2,433	100,000	1,460	3,89
Sepoy Lines	42,000	1,021	21,000	306	1,327
Jail	15,000	365	15,000	219	58

and as compared with the statement of cost of pumping in letter above quoted

	Municipality	Railway	Military	Jail
	Rs	Rs	Rs	Rs
As above	23,491	⊗ 3,893	1,327	58
As in letter No. 1241 of 1.10.97	21,500	x 8,542	3,587	1,28
Increase or decrease	+1,991	-4,649	-2260	-69

Some changes are also necessary in the size of the pipes. Why that is so is exhibited in the tracing of hydraulic gradients as revised and sent for information. The extra details of the cost is shown in the appendix - this falls

x This in original scheme was } Rs 9,000

⊗ As now proposed — 3,893

Decrease from original scheme -5,107

falls on the Municipality.

9. An addition has to be made on account of a small reservoir near the Wycondah and new pumping house I have not taken the cost of these out in detail. I do not think however anything but a well is required to receive the water whence it can be pumped again and this I calculate can be erected for Rs 2,500. The cost of the pumping house will be about Rs 3,500. The total of these amounts to Rs 6,000 and these are divisable in the proportion of

	Town	Railway	Military	Jail
Proportions	1094	100	21	15
Cost	Rs 2,675	Rs 1,445	Rs 513	Rs 367

I gather from Col. Coaker's remarks in para 4 of his letter that he had omitted to note that the difference between the real cost of the 10 gallons scheme of Mr Oldham and the new 15 gallons scheme is very little. Owing to the fact of underestimation of cost and to the incorrect principle on which the original amount debitable to the Railway was calculated, it might seem that the Railway gain no benefit under the conditions of an increased supply but that is not so because the works under Mr Oldham's plan would as shewn have cost almost as much and the pumping lift would have been 180 feet against 145 feet under my original scheme and against 105 + 60 = 165 under the one I am now suggesting.

10. Nor are Col. Coaker's suppositions correct in regard to the debits under Pipes and Laying Pipes. The Company were not charged with any portion of any main except that through which their water is to pass. That the debit was a very reasonable one may, I think, be said because the Railway Company calculates the cost of their own pipe at 21,009 while my debit was (Jail not included) 20,900. The Agent in his No 1685 of 28th October 1871 quotes the Chief Engineer who says that Rs 2,000 should be added to carry the offtake beyond the confluence of the Kodamurty river (where our proposed pumping station is situated) and that the rate put down for piping is too low and that the estimate would have to be increased by Rs 9,000. My only fear is therefore that I have not debited a large enough proportion of the cost of the piping to the Company who certainly in this instance gain by co-operation.

11. As to the other items in the estimates I do not think it will be wise to make any reductions in the size of the Pump House nor of its anticipated cost; if there is any saving the Company would benefit eventually. There are no changes

in the debits as to piping which remain the same size except in some instances where an increase will fall on the Municipality.

12. The general results are that the Company will now be asked to pay Rs 17,377 less for capital cost and Rs 5,107 - less per annum while the shares of the Military and jail are also decreased.

13. The whole cost of the scheme is also decreased but unfortunately that of Municipality will be slightly more.

14. A revised estimate is sent and is exhibited in detail in appendix I (1) while in I (2) and I (3) are exhibited the former estimates in my letters No. 251⊕ and 1371× respectively

× C No 251 8/4/91
⊕ 1151/m 24-7-91

15. In conclusion I would point out that the Company are urgently in need of the water and that if the Municipality delay in commencing the

the work the Company may get with tran

In G. O dated 4th May 1891 No. 641 it is stated that the Municipality had to meet an expenditure of Rs 3,100 more than was originally anticipated. This will unfortunately be still further increased as follows:-

	Rs
Proportion of initial cost to be borne by Municipality	3,66,435
Deduct half grant by Government	1,83,217
	1,83,218
Deduct savings available	15,500
	1,67,71
The yearly sum required to clear off this amount in 30 years with interest at 4¼% will be	10,297
Add proportionate working charges	23,491
Total annual cost to the Municipality	33,78
Deduct (Rs 31,213 - Rs 3,100. Vide para 39 of Sanitary Engineer's letter No. 251 of 8.4.91 embodied in G. O dated 4th May 1891 No. 641 M., L & M)	28,11
Increased cost of scheme as compared with Mr. Oldham's scheme	567

This need not form any bar to beginning the scheme as the greater art of the annual expenditure is for pumping charges which can be reduced by affording a reduced supply to the town in fact if the Municipality were only to deliver 10 gallons per head to begin with they can easily arrange to meet the expenditure. I trust therefore Government will be able to sanction the scheme at an early date and that the arrangements now proposed will be satisfactory to the Company and the other bodies concerned.

I have the honor to be,
Sir,
Your most Obedient Servant

Sanitary Engineer to Govt.

Appendix I (1)

Scheme proposed in foregoing Report.

	Town	Railway	Military	Jail	Total
	Rs	Rs	Rs	Rs	Rs
Infiltration works	22,922	2,547	1,069	3~~5~~82	
Engine & Boiler House, Main	10,927	4,334	1,817	532	
Do Subsidiary	2,675	2,445	513	367	
Engines & Pumps, Main	64,370	7,150	3,000	1,080	
Do Subsidiary	4,830	4,390	930	650	
Pipes	177,585	20,720	8,700	× 2,000	
Additional cost	5,078				
Valves & fountains	15,135	1,769	740	180	
Laying pipes	21,724	2,532	1,063	255	
Additional cost	424				
	325,720	45,887	17,832	5,446	
Contingencies at 12½ %	40,715	5,736	2,229	680	
	366,435	51,623	20,061	6,126	
Total					444,245

× This is without the piping which is to supply the jail and solely for the use of the Jail - Vide my No. 1371 dated 1st October 1891.

Sanitary Engineer to Govt.

Appendix I (2)

Vide my letter No. 251 of 8th April 1891.
(Original scheme)

	Town	Railway	Sepoy line.
	Rs	Rs	Rs
Infiltration works	23,253	2,583	1,084
Engine and boiler house	11,046	4,622	1,942
Engines, boilers and pumps	67,256	28,692	12,052
Pipes	1,79,327	20,900	8,778
Valves and fountains	15,337	1,787	750
Laying pipes	21,944	2,557	1,073
	3,18,163	61,141	25,679
Contingencies including establishment at 12½ %	39,837	7,859	3,321
	3,58,000	69,000	29,000
Total		4,56,000	

Sanitary Engineer to Govt.

Appendix I (3)

Vide my letter No. 1371 of 1st October 1891.
Original scheme but with Jail included.

	Town	Railway	Sepoy Lines.	Jail.
Infiltration Works	22,922	2,547	1,069	382
Engine and Boiler House	10,927	4,334	1,817	532
Engines, Boiler and Pumps	67,031	26,550	11,150	3,269
Pipes	177,585	20,720	8,700	2,000
Valves and fountains	15,185	1,769	740	180
Laying pipes	21,724	2,532	1,063	255
	315,374	58452	24,539	6,618
Contingencies at 12½ %	39626	7,368	3,091	832
	355,000	65,820	27,630	7,550
	4,56,000			
As against previously	358,000	69,000	29,000	
	4,56,000			

Sanitary Engineer to Govt.

/

3126 M 91

1891.

From
The Sanitary Engineer
to Government,

To
The Chief Secretary
to Government
Local and Muni Dept

No. 1741

Dated 19th
Despd. 20th } November 1891.
Recd.

CHIEF SECRETARIAT
Encl 20 NOV
GOVERNMENT

L & C No 29792
with Encls
(including plan)

Subject.

Trichinopoly Water Supply

Submitting his remarks on letter from the Consulting Engineer for Railways under which the proportionate share of South Indian Railway Co. is considerably reduced both in the initial cost and annual paying charges.

Recd also [illegible] Jnsl.

1059 Cuddapah

No. 286

OFFICE OF INSPECTOR-GENERAL OF JAILS,

Dated 3d August 1891.

105
105
4 P

From
Colonel J. L. Smith
INSPECTOR-GENERAL OF JAILS,

To
THE CHIEF SECRETARY TO GOVERNMENT.

Communicated with G.O. dated 8th July 1891. R. No 715. Judicial department

Enclosures.

Communicated with G.O. dated 2nd July 1891 No 1306 Judicial department

SIR,

With reference to G.O. No 1672 W dated 20th June 1891 in which the Superintendent of the Geological Survey expresses a very strong opinion that it is no use going on boring wells near the Trichinopoly Jail, and thinks it would be far better to collect water by surface collection, I have the honor to report for the information of Government that the estimate for a surface collection prepared by the Jail Superintendent referred to by Mr Martin in his letter contained in G.O. No 1451 W dated 27th May 1891 was only for a six months supply for 1000 men at 5 gallons a day. I have lately been all over the ground and find that the collecting surface can easily be doubled in size. I have directed the Superintendent to have an estimate prepared for a very much larger collecting surface and larger reservoirs. When ready I will submit it to Government for sanction. It appears to me now as it did a year ago, to be the only means of getting a good water supply for the jail.

2. I made enquiries as to whether the proposed scheme of raising the Cauvery water to a reservoir on the rock and thence by pipes into the town of Trichinopoly could be extended to the jail but the District Engineer thought that it could not be done as the jail is on such high ground.

I have the honor to be,
Sir,
Your most obedient Servant,

J L Smith Colonel
Inspector-General of Jails.

14/11

CURRENT No. 35

JUDICIAL.

JAIL (1891) DEPARTMENT.

GO 8 . 7 . 91 : 715 R ✓
2 . 7 . 91 : 1306 m ✓
26 . 1 . 91 : 175 m ✓
6 . 5 . 91 : 880 SC ✓
30 . 1 . 91 : 195 m ✓
14 . 3 . 90 : 484 m ✓
12 . 3 . 90 : 470 SC ✓

From

The Inspector-General of Jails,

To

The Chief Secretary to Government.

H M

Order

Recorded

[illegible] 13 Aug

[illegible] 14 Aug

I think we [illegible] should be asked whether the Jail could be brought within the influence of the [illegible] scheme [illegible] I doubt whether the Jail is higher [illegible] Reservoir [illegible] but it may be. Water is to be delivered at the Jail [illegible] with [illegible] considerable head. HCG 18 Aug

Dated 31st
Despatched
Received
August 1891.

No. 286

Copy to the P.W.D. 10/8

Local & Municipal Dept.
Dated 31st August 1891
CURRENT No. [illegible]

Transferred to the Local & Municipal Department with reference to the Hon'ble Member's remarks.

A. Butterworth.
Ag. Under Secretary.

CHIEF SECRETARY
25 AUG 91

ENCLOSURES

Subject.

Concurring with the opinion expressed by the Geological Survey Superintendent and informing that the estimate referred to by the Superintending Engineer was only for a six months supply for 1000 men at 5 gallons a day and that the Jail Superintendent has been directed to have an estimate prepared for a larger collecting surface & larger reservoirs.

C 157

[9]

Local & Municipal Dept.
CURRENT No. 2235 M

LOCAL AND MUNICIPAL DEPARTMENT

1151 M 24-7-91
671 M 4-5-91
1308 Judl. Dr. 2-7-91
715 Judl. Dr. 8-7-91
880 Judl. 6-5-91

195 Judl. Dr. 30-1-91
175 Judl. Dr. 26-1-91
484 Judl. Dr. 14-3-90
470 Judl. 12-3-90

From

The Judicial Department.

No.

Dated 31-8-91.

Received 2-9-91.

Enclosures -

SUBJECT.

Transferring, with reference to the Honorable Members remarks, letter from the Inspector-General of Jails regarding the Trichinopoly Jail water supply.

For

(with annex)

6

No. 762

Referred to the Sanitary Engineer for ~~remarks~~ report as to whether the scheme proposed by him for supplying the town cannot be extended also to the Jail & if so, at what additional expense.

(By order)

W.B.
Ag. Assistant Secretary

V.P.
4/9/91

Fort St. George
16th September 1891

To The Sanitary Engineer.

Sept 16/9

Copy to Judl. Dept.
for info.

Keep the original here.

P.J.
14/9

GB Jul 719

09

LOCAL AND MUNICIPAL DEPARTMENT.

Current No. 2124 M

From

The Chairman Munl. Council Trichinopoly

FOR ORDERS.

The replies from the Railway & ~~[illegible]~~ Military Departments have not been received although a reminder was issued in G.O. d/ 24.7.91. No 1151 M. The scheme will have to be modified in any case in order to supply the Jail as ordered by the ~~[illegible]~~ Govt.* The Council's proposals to revise the arts tax schedule will be considered with the Act when the proposals of the Vizagapatam Chairman are received. The imposition of octroi duties has already been negatived by Govt.

W.B.
28.8.91.

*. Not in the file. It was stated that the Jail should if possible be linked on to the system and Mr. Jones was to report. He has recently transferred these to [illegible]

3 Sept

The Railway & ~~[illegible]~~ Military Depts. must be again reminded. I think the latter has addressed Indian Govt. but I have seen nothing in P.W.D. as to the former.

I am afraid it is clear that the municipality cannot finance the extended project without further taxation. I am prepared to increase the provincial grant to 2.28 lakhs being half the total

Cost of the scheme as suggested by the Hon. Mr. [illegible] in his note in C.O. 4 May 91 No 671.

If the Rly & Military agree, the case will then stand thus.

Total cost.	456000
Provl. Govt	228,000
Railway	69000
Mily. Dept.	29000
	326 000
Municl. share.	130000 *
Two years savings	31,400
To be borrowed	98,600

* Less than $\frac{1}{3}$ of the whole cost.

Annual charges.

Service of loan (30 yrs. at 4½)	5876.
Working charges.	21500
Repairs &c.	5000
	32376.

Against which the Council show Rs 28,200. The balance Rs 2276 will doubtless be capable of provision from increased taxation under the revised Act, or if this does not turn out to be the case we shall have to make an annual grant in aid.

If it be possible to supply the [illegible] in connection with the scheme, the whole addl. cost ought to be paid from Provl. funds.

W
11 Sep.

From 32376
Take 28200
the balance is - 4176

My figure is wrong as pointed out by W. But if the proposed Capitation to raise the maximum income tax from 7½ to 10% is carried out the sum of Rs 41[illegible] can easily be provided from increased taxation as the amount of income tax [illegible] is now Rs 28,[illegible] in the whole [illegible] Rs 14667 [illegible] [illegible]

12 Sep

// The Municipality might be able to raise this under the revised Act - but it will take them all they know - & we shall most likely have to help them out

W
11 Sep

8/9/91

W
11 Sep

supply scheme

FOR ORDERS.

---

[5]

Local DEPARTMENT.

Papers to be read in Proceedings :—

1139

Again G.O., dated 18 , No.

Again G.O., dated 24th July 1891 , No. 1151 M.

Current No. 2124 M of 1891 , dated 19th Aug. from the Chairman Mucl Council, Trichinopoly

Current No 2225 M of 1891 dated 31st August from the Judicial Department.

Current No. 2560 M of 1891 , dated 1st October from the Sany Engineer

order

With the first of the letters read above, the Chairman of the Municipal Council, Trichinopoly, submits his proposals for defraying the cost of the scheme of water-supply sanctioned in the G.O. read above. In the third letter read above, the Sanitary Engineer proposes to supply the Jail also with water from the same source as the rest of the town and suggests that the cost of the scheme may be redistributed as follows amongst the parties concerned :—

	Capital Outlay	Working charges per annum
	Rs.	Rs
Municipality	3,55,000	21,500
Railway Company	65,820	8,542
Military Department	27,630	3,587
Jail	7,550	1,281
Total	4,56,000	34,910

These proposals have the approval of Govt & will be adopted in supersession of those sanctioned in G.O. dt 4.5.91. No. 671 M. The shares of the capital cost debitable to the Military Department & the South Indian Railway Company should be placed at the disposal of the Municipal Council without further delay.

2. In order to defray the cost of the scheme, the Mucl Council & the Collector have, from time to time, submitted proposals which may be summarized as follows :—

× Please see Collector's letter in G.O. dt 17-7-90 No. 62 M.

× para 5 of Chairman's letter in G.O. dt 19-5-91 No. 803 M.

	Rs
1. Extra revenue from revision of house & land taxes, completed November 1890×	5,400
2. Water-tax, on portions of the town supplied×	10,500
3. Extra income from markets×	4,000
4. Slaughter-house×	1,000
5. Saving in existing water establishment &c×	2,000
6. General revenues×	3,300
7. Extension of Profession tax to last three classes of the schedule	2,000
Total	28,200

In the circumstances now stated, the Govt will be prepared to increase the grant-in-aid from Provincial funds to Rs 2,22,000 & the share of the capital cost debitable to the Municipality will thus be reduced to Rs 1,27,000 or, in round numbers, Rs 1,30,000. As pointed out by the Collector, the ~~Municipality~~ Council should be able to meet Rs 31,400 of this from the accumulated savings of the two years preceding the commencement of operations. The amount remaining to be borrowed will thus be Rs 98,600 & the annual charges ~~to~~ involved by the scheme will thus be:—

	Rs
1. Service of loan (30 yrs at 4¼ %)	5,876
2. Working charges	21,500
3. Repair of pipes &c	5,000
Total	32,376

It thus appears that there will be an annual deficit of at least Rs 4,876 which can only be met by increased taxation for which legislation will be necessary. The question of revising the assts. tax schedule will be considered when the Act is revised, but the imposition of octroi duties, as suggested by the Council, cannot be ~~entertained~~ permitted. There seems to be no good reason for abandoning the scheme, notwithstanding ~~[illegible]~~ the financial difficulties now apparent, but final orders on the subject will be passed when the decisions of the Military Department & of the Railway Company relative to the questions referred to them have been received.

(for orders)

WBS
C.M.G.

6 Nov.

I am unable to countersign the ~~proposed~~ draft G.O. as the South Indian Ry. is not prepared to accept the scheme & a full report has been submitted to Govt. & is now being transferred to L. & M. Dept.

7/11 R

The Cecy [illegible] Ry Dept) for consideration with a view of submission of a note as directed by the Hon'ble on Cur 2580 M.

WBS
8.11.91

(for orders)

115

LOCAL AND MUNICIPAL DEPARTMENT.

Current No. 3126 M

From

The Sanitary Engineer.

This should be communicated across for the consideration of the Ry. Compy. The arrangement now proposed seem satisfactory. Mr. Jones does not state what would be the saving to the Muni. in annual charges by delivering for the time only 10 gallons per head instead of 15, nor whether it is possible while making the smaller delivery to the town still to supply the full quantity to the Ry., Mily. lines & Jails. I presume it is and I would & refer the whole in communication to the Muni.

[illegible]
26 Nov.

FOR ORDERS.

Before transferring the above Current to the Public Works Departt orders have to be passed on the distribution now proposed by Mr. Jones. The draft order on Curs 2124, 2235 & 2580 M. of 1891 shows the position of affairs up to date. The following statement compares the present proposals with those last made by Mr. Jones:—

18/11/91

	Capital outlay		Working charges per annum	
	Last proposals	Those now made	Last proposals	Those now made
Municipality	3,55,000	3,66,435	21,600	23,491
Railway	55,820	51,623	8,542	3,893
Military	27,630	20,061	3,557	1,327
Jail	7,550	6,126	1,281	584
Total	4,56,000	4,44,245	34,910	29,29

Comparing this with the cost of a separate Railway scheme as given in para 6 of the note of the Consulting Engineer for Railways it would appear that the cost will to the Company will be Rs 3,893 + (7½ % of 51,623) = Rs 3,893 + 3,872 = Rs 7,765 against Rs 8,925 per annum. The scheme appears therefore to be decidedly advantageous for the Railway Company. If it is adopted the cost to the Municipality will be:—

~~Half cost of~~

Municipal share — half cost of whole scheme*	= Rs 1,44,313
Deduct savings for two years	31,400
	1,12,913
Cost of service of loan of Rs 1,10,000*	= Rs 6,555
Working charges	23,491
Repair of pipes &c.	5,000
	35,046

3,66,435
2,22,122
1,44,313

* the extra amount may probably be met from general revenues

Or Rs 35,046 − 32,376 = 2,670 more than was hitherto contemplated. This will make the annual deficit prepared to increase the grant-in-aid from Provincial funds to Rs 2,22,400 & the share of the capital cost debitable to the Municipality will thus be reduced to Rs 1,27,000 or, in round numbers, Rs 1,30,000. As pointed out by the Collector, the ~~Municipality~~ Council should be able to meet Rs 31,400 of this from the accumulated savings of the two years preceding the commencement of operations. The amount remaining to be borrowed will thus be Rs 98,600 & the annual charges ~~to~~ involved by the scheme will thus be:—

	Rs
1. Service of loan (30 yrs at 4¼%)	5,876
2. Working charges	21,500
3. Repair of pipes &c	5,000
Total	32,376

It thus appears that there will be an annual deficit of at least Rs 4,876 which can only be met by increased taxation for which legislation will be necessary. The question of revising the arts-tax schedule will be considered when the Act is revised, but the imposition of octroi duties, as suggested by the Council, cannot be ~~entertained~~ permitted. There seems to be no good reason for abandoning the scheme, ~~on account of~~ notwithstanding the financial difficulties now apparent, but final orders on the subject will be passed when the decisions of the Military Department & of the Railway Company relative to the questions referred to them have been received.

(Jones' orders)

WAB
5.11.91

6 Nov.

I am unable to communicate the ~~proposed~~ draft G.O. as the South Indian Ry. is not prepared to accept the scheme & a full report has been submitted to Govt. & is now being transferred to L. & M. Dept.

7/11 R

The Secy P.W.D. (Ry Dept) for consideration & for submission of a note as directed by the Hon'ble on Curs 2560 L.M.

RSB
8.11.91

115

LOCAL AND MUNICIPAL DEPARTMENT.

Current No. 312 L.M.

From

The Sanitary Engineer.

This should be communicated at once for the consideration of the Ry. Compy. The arrangement now proposed seems satisfactory. Mr. Jones does not state what would be the saving to the Muny. in annual charge by delivering for the time only 10 gallons per head instead of 15, nor whether it is feasible while making the smaller delivery to the town still to supply the full quantity to the Ry., Mily. Lines & Jail. I presume it is. Ask him & refer the whole in communication to the Muny.

JHO
26 Nov.

FOR ORDERS.

Before transferring the above Current to the Public Works Departt. orders have to be passed on the distribution now proposed by Mr. Jones. The draft order on Curs 2124, 2235 & 2560 L.M. of 1891 shows the position of affairs up to date.

The following statement compares the present proposals with those last made by Mr. Jones:—

1R
4/11/91

	Capital Outlay		Working charges per annum	
	Last proposals	Those now made	Last proposals	Those now made
Municipality	3,55,000	3,66,435	21,500	23,491
Railway	65,820	51,623	8,542	3,893
Mility	27,630	20,061	1,557	1,327
Jail	4,550	6,126	1,281	584
Total	4,56,000	4,44,245	34,110	29,295

Comparing this with the cost of a separate Railway scheme as given in para 6 of the note of the Consulting Engineer for Railways it would appear that the cost ~~with~~ to the Company will be Rs 3,893 + (7½% of 51,623) = Rs 3,893 + 3,872 = Rs 7,765 against Rs 8,925 per annum. The scheme appears therefore to be decidedly advantageous for the Railway Company. If it is adopted the cost to the Municipality will be:—

~~Half cost of~~

Municipal share — half cost of whole scheme*	= Rs 1,44,313
Deduct savings for two years	31,400
	1,12,913
Cost of service of loan of Rs 1,10,000*	= Rs 6,555
Working charges	23,491
Repair of pipes &c.	5,000
	35,046

*
3,66,435
2,22,122
1,44,313

* The extra amount may probably be met from general revenues.

Or Rs 35,046 − 32,376 = 2,670 more than was hitherto contemplated. This will make the annual deficit

Trichinopoly Water Supply Scheme

FOR ORDERS.

Hm

V.E

Infs 2113 M
30-11-91

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[5] Ir.M. DEPARTMENT.

Papers to be read in Proceedings :—

119/32 P

P Again G.O., dated 4th May 1891, No. 691 Mun

P Again G.O., dated 24th July 1891, No. 1151 Mun

P Current No. 2124 M of 1891, dated 19th Aug from the Chairman Munl Council, Trichin

A Current No. 2235 M of 1891, dated 31st Aug from the Judicial Dept.

A Current No. 2560 M of 1891, dated 1st October from the Sany Engineer

(3) with Enclosa A Current No 2979 M of 1891 dated 7th November from the P. W. D.

with 3 Encl A Current No 3126 M of 1891 dated 19th November from the Sany Engin

order G.O. 30-11-91, No. 2113 M

With the first of the letters read above, the Chairman of the Munl Council, Trichinopoly, submits proposals for defraying the cost of the scheme of water-supply sanctioned in the G.O. read above. It is now, however proposed to modify the arrangements ~~[illegible]~~ approv of in that order with a view to the inclusion of the Jail in the general ~~scheme~~ scheme & to meet the objections taken by the South Indian Railway Company to the scheme & to the distribution of its cost between the participants. According to the modified scheme no submitted by the Sany Engineer in the last letter re above the cost will be redistributed as follows :—

	Capital Outlay Rs	Working charges per a Rs
Municipality	3,66,435	23,491
Railway Company	57,623	3,893
Military Department	20,061	4,327
Jail	6,126	[illegible]
	4,44,245	29,24

The arrangements proposed seem to be satisfacto as they differ considerably from those previously mitted the papers will be communicated to the ~~[illegible]~~ Engineers & Depts concerned in continuation of previous It is observed, from para 6 of the ~~[illegible]~~ endorseme Consulting Engineer for Railways transferred wit fourth letter read above, that the cost of a sep scheme for the Railway Company as now co will be Rs 8,925 per annum, while the share to the Company under the revised scheme a the Sany Engineer will be Rs 7,765 only per scheme should, therefore, be considered at date by the Railway Company & its deci cated to Govt as soon as possible.

2. The proposals now made entail a con in the outlay to be met from Munl funds [illegible] is of opinion that this need not

in town water only

water per head of population ~~[illegible]~~, instead of 15 gallons per head. Mr Jones does not state what would be the saving to the Muny under these conditions, nor whether it is possible while ~~[illegible]~~ delivering the smaller quantity of water to the town still to supply the full quantity to the Ry. Mily lines & Jail. The Sany Engineer will furnish the necessary information with regard to these points.

3. Turning to the financial part of the question, so far as the Municipality is concerned, it is clear that the cost of the scheme ~~[illegible]~~ when in full working order cannot be met from Muml Funds ~~[illegible]~~ under present ~~circumstances~~ conditions. In the circumstances now stated, the Govt will be prepared to increase the grant-in-aid from Provincial Funds to Rs 2,22,000 & the share of the capital cost debitable to the Municipality will thus be reduced to Rs 1,44,435. As pointed out by the Collector, the Council should be able to meet Rs 31,400 of this from the accumulated savings of the two years preceding the commencement of operations. The amount remaining to be borrowed will thus be Rs 1,13,035 or say Rs 1,10,000, the balance being met from general revenues in the course of executing the work. The annual charges involved by the scheme will thus be:—

	Rs
Service of loan (30 yrs at 4½%)	6,555
Working charges	23,491
Repair of pipes	5,000
	35,046

ust this the Muml Council & the Collector have, from to time, submitted proposals which may be sum-ed as follows:—

Sources of increased income	Amount Rs
1. Extra revenue from revision of house & land taxes completed Nov. 1890	5,400
2. Water-tax, on portions of the town supplied	10,500
3. Extra income from markets	4,000
4. Slaughter-house	1,000
5. Saving in existing water establishments &c	2,000
6. General revenues	3,300
7. Extension of Profession tax to the last three classes of the schedule	2,000
	28,200

appears that there will be an annual deficit of Rs 6,846 which can only be met by increased for which legislation will be necessary. The by revising the arts-tax schedule will be consi-hen the Act is amended, but the imposition duties, as suggested by the Council cannot be

Final orders relative to the execution of the will issue when the information called for ceedings has been furnished & the decisions Dept & of the Railway Company on the questions have been received.

W.A.S.
6.2.91
(from orders)

25

(Guarden)

To

The Chairman Muml Commissioners
thro' the Collr
" Public works Departt Railway Branch
with 3 Enclosures returned
" Military Departt
" Judicial Departt
" Sanitary Engineer with one enclosure returned

in town with only

water per head of population ~~daily~~, instead of 15 gallons per head. Mr Jones does not state what would be the saving to the Muny under these conditions, nor whether it is possible while ~~working~~ delivering the smaller quantity of water to the town still to supply the full quantity to the Ry. Mily lines & jail. The Sany Engineer will furnish the necessary information with regard to these points.

3. Turning to the financial part of the question, so far as the Municipality is concerned, it is clear that the cost of the scheme ~~when~~ when in full working order cannot be met from Munl Funds ~~under~~ under present ~~circumstances~~ conditions. In the circumstances now stated, the Govt will be prepared to increase the grant-in-aid from Provincial Funds to Rs 2,22,000 & the share of the capital cost debitable to the Municipality will thus be reduced to Rs 1,44,435. As pointed out by the Collector, the Council should be able to meet Rs 31,400 of this from the accumulated savings of the two years preceding the commencement of operations. The amount remaining to be borrowed will thus be Rs 1,13,035 or say Rs 1,10,000, the balance being met from General revenues in the course of executing the work. The annual charges involved by the scheme will thus be:—

	Rs
Service of loan (30 yrs at 4½%)	6,555
Working charges	23,491
Repair of pipes	5,000
	35,046

…inst this the Munl Council & the Collector have from … to time, submitted proposals which may be sum…rised as follows:—

Sources of increased income	Amount Rs
1. Extra revenue from revision of house & land taxes, completed Nov. 1890	5,400
2. Water-tax, on portion of the town supplied	10,500
3. Extra income from markets	4,000
4. Slaughter-house	1,000
5. Saving in existing water establishments &c.	2,000
6. General revenues	3,300
7. Extension of Profession tax to last three classes of the schedule	2,000
	28,200

…appears that there will be an annual deficit …of Rs 6,846 which can only be met by increased … for which legislation will be necessary. The … of revising the arts-tax schedule will be consi… …en the Act is amended, but the imposition … duties, as suggested by the Council cannot be … final orders relative to the execution of the … will issue when the information called for … ceedings has been furnished, & the decisions … Dept & of the Railway Company on the questions … have been received.

(From orders)

6. 4. 91.

(From orders)

To

The Chairman Munl Commissioners thro' the Collr
" Public works Depart Railway Branch with Enclosures returned
" Military Depart
" Judicial Depart
" Sanitary Engineer with the enclosure returned