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MADRAS RECORD OFFICE.

Government of Madras.

M Series

Local & Municipal **DEPARTMENT.**

G.O. No.	1731 M	**Press** Series **Mis.**	
Dated	10. 10	**19** 1896	

Not to be folded or roughly handled

Water Supply—

Sanctioning with remarks the revised estimate of of Rs. 5,18255 for the — of Trichinopoly and stating that orders will be passed regarding the — scheme of Srirangam on receipt of the Municipal Council's remarks on it.

Local & Munl. (1896.) Department.

PRINTED.

G.O., No. 1731 M

DATED 10th Oct. 1896

INDEXED.

[Despatch Abstract.]

Water Supply. Sanctioning, with remarks, the revis
estimate of Rs 5,18,255 for the — of Trichinop
and stating that orders will be passed regar
ing the — scheme for Srirangam on receipt
of the Municipal Councils' remarks on it.

BACK PAPERS.

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

FURTHER PAPERS.

No.	Department.	Date.	G.O.	No.	Department.
Ciro 3212 L/96					
Ciro 3226 L/96					

Reminder of G

Government (1896) of Madras.

LOCAL AND MUNICIPAL.

Recd. } 1896. Enclosures
Regd. } Spare copies

G.O., No. 1731 M., 10th October 1896.

OCTOBER.

Water-supply.

Sanctioning, with remarks, the revised estimate of Rs. 5,18,255 for the — of Trichinopoly, and stating that orders will be passed regarding the — scheme for Srírangam on receipt of the municipal council's remarks on it.

GOVERNMENT OF MADRAS.

LOCAL AND MUNICIPAL DEPARTMENT.

Read—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, 19th May 1896, No. 1559.

I have the honour to forward herewith revised estimates in connection with the water-supply scheme for Trichinopoly, which is approaching completion.

2. The estimate submitted after the destructive floods of 1893 was called a revised estimate, but in reality it was the original estimate for the works as constructed; the estimate now forwarded is therefore the first revision.

3. The accompanying comparative statement shows that the cost of the works as originally proposed, the estimate for which was Rs. 5,02,050, will be to the participators (if proposals to be made are acceded to) Rs. 5,18,255. There are, however, certain other works which are not included in the original estimate which, for reasons hereafter given, it is now deemed desirable to construct.

4. Dealing with the revised estimate for the works as originally designed, the first item to which I wish to call attention is the last in the estimate, viz., contingencies, tools and plant, &c. The revised figure of Rs. 62,167 is made up as follows :—

		Rs.
Contingencies	Establishment	29,547
	Other contingencies	12,965
Tools and Plant	Machinery	16,733
	Other plant	2,922
	Total	62,167

The charges for establishment are on the basis that the services of the Assistant Sanitary Engineer will be necessary at least up to the end of September. These charges amount to only 6 per cent. on the estimate, which is very low compared with what is charged and allowed in other departments, but they are nevertheless larger than they would otherwise have been, had not the works (owing to the large amount of water which had to be dealt with in foundations and to lengthened flood periods) proved much more difficult of execution than anticipated and thus extended over a longer time than estimated for.

5. It will be noticed that a deduction has been made from the total of the revised estimate on account of machinery purchased under conditions laid down in G.O., Mis. No. 1261 M., dated 19th September 1893. The cost of the machinery was Rs. 16,733, it is now put down at Rs. 13,387, or 20 per cent. reduction for two years' use. It is unlikely that the municipality would find purchasers for it, although it may wish to retain some, and it is hoped Government will take over the balance as it will be useful on future works whether carried out by this department or the Public Works Department. If the municipality purchases it must, of course, pay for its purchase from other funds so that all the participators in the scheme are properly credited with their share.

6. Dealing next with the other individual items; revised estimates are attached which show clearly how the extra expenditure has occurred. To go into all the details of each of these would be almost a repetition of the figures in these estimates, but I make, for the information of Government, the following notes as to the main causes for increase :—

(i) *Infiltration wells.*—When the works came to be executed the river sand bed has been found to be 3½ feet higher on an average than in the original section (the level varies from year to year) and this required this excess amount of sinking and building for the three river wells. Again it was found that in sinking the wells the employment of divers was absolutely necessary as when the water was lowered by pumping the wells immediately filled up. In addition to the excess due to the above causes, the rates of the lowest and accepted tender were somewhat higher than the estimates.

(ii) *Steel pipes to collecting wells.*—Though there was a slight reduction in the length laid, the pipe has been laid at a lower level because of the rise in the river-bed as already noted and because further consideration rendered it desirable that the pipe which may have to act as a syphon occasionally should have a fall away from the pump well so that any air in the pipe might rise to that end and escape. The greater depth of excavation entailed increases in the cost of pumping and piling.

(iii) *Raising site and retaining wall.*—There is a slight increase due to an excess length of wall to extend it into the river bank further than was originally thought necessary and to a great depth of wall being necessary at the point of the crossing of the collecting pipe under it; this was not at first foreseen. The lowest tender rates were higher than the estimate rates.

(iv) *Diversion of flood banks, &c.*—Part (Rs. 110) of the excess is due to the contractor's tender being higher than estimate and part due to a provision for metalling a larger area and length of road to the pumping station and drivers' quarters than at first proposed.

(v) *Screening chamber.*—This shows a slight increase only.

(vi) *Main engine and boiler house, and engines, pumps and boilers.*—These are taken together; the expenditure under engines is less than the original, because the amount entered is for engines alone not including their foundations, building round boilers, &c. The excess of Rs. 2,300 is due chiefly to an excess cost of foundations owing to the difficulty of constructing the house on ground undermined by the operation of sinking the screening chamber and the pumping well and to large beds of concrete having to be formed for building the tower, the engine room floor and foundation for boilers.

(vii) *Store and wood shed.*—This shows a small increase of Rs. 415. The chief increase is due to excess iron found to be necessary for roof and to the provision of shelves and plastering with cement.

(viii) *Engine drivers' quarters.*—This shows a decrease.

(ix) *Subsidiary engine and boiler house, and engines, pumps and boilers.*—The increase is due chiefly to the excess cost of flooring, to the necessity for raising the railway wall and providing a wall to shut in the station from the adjoining buildings and to an extra length of flue over that provided in estimate.

(x) *Pipes, valves, &c.*—Increase Rs. 1,464. It is always difficult to estimate the exact cost of these, as small items not provided for and which cannot be foreseen are invariably required.

(xi) *Laying and jointing pipes, &c.*—The increase is Rs. 7,181. The work is almost completed and the actuals entered. There was considerable difficulty found in laying some of the pipes. At one place a large length of rock had to be blasted, at other places the old fort walls were traversed and the excavation consisted of large boulders and stones which had to be raised by shear legs. A large portion of the excess is due to an extra number of lead joints having to be put in where broken and cut pipes were used instead of turned and bored pipes. Again in laying pipes through the town numerous culverts, drains, &c., were encountered that no one knew previously anything of. The excesses are made up of so many small items that it is only by copying out the ledger that they can be detailed to any extent.

(xii) *Losses by floods.*—These stand as in the previous estimate.

(xiii) *Contingencies, tools and plant, &c.*—This item has been already referred to—see paragraph 4.

7. Detailed estimates are forwarded for information.

8. The total excess over original estimate, if the above figures are accepted, amounts only to Rs. 16,205 or little over 3 per cent. I venture to say that for a class of work where so much water had to be dealt with this is not an unsatisfactory result, especially as for long periods divers with diving dresses have been employed and much steam pumping done. I cannot say that the contractor will consider the result so satisfactory, for he has had to increase his proposed expenditure very considerably in many cases and while the estimate in some particulars is increased to meet some of the charges for extra work it has not been deemed equitable to allow for other cases where extra work was not ordered but unforeseen expenditure was incurred.

9. At the foot of the comparative statement will be found three additional works proposed—

	RS.
Native staff quarters	3,800
Fencing around pumping station	2,450
Additional well, &c.	12,064
Total ..	18,314

10. The pumping station is so far away from Trichinopoly town (about 2 to 3 miles) that it will not be expedient for the coolies employed on the pumping station to traverse that distance daily and it will be advantageous to erect native staff quarters to keep the men on the premises; the necessity for the construction of such quarters is one about which there is little doubt, and about the expediency of which there is none.

11. It is also desirable to fence the engine station to keep out intruders and protect properly fuel, &c.; steel pale fencing is proposed.

12. The third item is also recommended. Pumping has been going on for some time. The season is no doubt an abnormal one, and is one therefore in which a good test has been possible as the water has seldom if ever been so low in the Cauvery bed. From the three wells the possible supply without lowering the water more than 5 feet (below that sand blows into the well) is 750 gallons per minute.

13. At present the quantity required for all parties is—

	GALS.
Town	600,000
Military	42,000
Railway	100,000
Jail	15,000
Per 24 hours ..	757,000
Half in 6 " ..	378,500
In 1 hour ..	63,083
In 1 minute ..	1,051

One more well will be required; the town will not take probably more than half 600,000 gallons at first and of course immediately the river even slightly rises the supply will be sufficient, but I recommend strongly that during the next dry season another well be constructed. (This is altogether apart from the one recommended for Sríramgam).

14. The cost of the above items if approved by the participators should be borne in the pre-arranged proportion by the various contributors to the scheme. Taking it

that Government will approve of the additional items and of the sale of the machinery, the total of the new estimate would stand at Rs. 5,36,569 and the excess payments would be thus—

—	Percentage.	Estimate as now submitted.	Previous estimate.	Excess.
		RS.	RS.	RS.
Municipality	82·5	4,42,669	4,14,120	28,549
Railway	11·6	62,242	58,340	3,902
Military	4·5	24,146	22,670	1,476
Jail	1·4	7,512	6,920	592
Total ..	100	5,36,569	5,02,050	34,519

If Government pay the usual amount of Rs. $\frac{34,519}{2}$ = Rs. 17,260, the amount of loan to be raised by the municipality will be Rs. 28,549 — 17,260 = Rs. 11,289 at 5·96 per cent. = 678.

15. Another item not as yet referred to is the construction of a service reservoir. This is referred to, because of the desire of the municipality (*vide* correspondence noted in margin attached). The whole cost of the reservoir, Rs. 70,000, should be borne by the municipality less any grant Government may propose to make.

Letter No. 1515, dated 4th May 1896, from the Chairman, Municipal Council, Trichinopoly, to the Sanitary Engineer to Government, with an extract from the proceedings of the Municipal Council under date 30th April 1896.

Letter No. 1508, of 15th May 1896, from the Sanitary Engineer to Government, to the Chairman, Municipal Council, Trichinopoly.

16. If, however, the town of Sríramgam enters the scheme, the proportionate cost shown in the table in paragraph 14 will be materially altered and no increased contribution whatever will be required from the participating parties.

17. In my No. 407, of 10th February 1896, I estimated that the proportionate cost of the head works which Sríramgam would have to bear would be Rs. 53,853. Seeing that for Sríramgam another well must be provided for its sole use, the proportionate cost of the head works may be calculated as 25 per cent. of the following:—

	RS.
Raising site and retaining wall	15,340
Diversion of flood banks	2,000
Screening chamber	17,500
Main engine and boiler house, and engines and pumps	95,400
Store and wood shed	2,800
Engine drivers' quarters	6,200
Native staff quarters	3,800
Fencing around pumping station	2,450
	1,45,490
Twenty-five per cent. of the above	36,372
Add 15 per cent. for contingencies, &c.	5,455
	* 41,827
Proportionate cost of main	22,706
Total ..	64,533

The above sum is much above the excess shown in the table in paragraph 14, so that if Sríramgam enters the scheme, the excess would be entirely met without drawing further sums from contributors and there would be a balance of Rs. 64,533 — 34,519 = 30,014 in their favour.

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* This figure is instead of Rs. 53,853 appearing in the table in my No. 407 quoted above and which appears to have included a proportionate cost of the whole of the head works including wells and collecting pipe and not now included as not fairly debitable, as Sríramgam will obtain a supply from its own well alone. This would make the cost of the Sríramgam scheme only Rs. 64,533 + 96,540 = Rs. 1,61,073 instead of Rs. 1,73,099.

18. An early decision as to Srírangam and other points above mentioned is therefore desirable.

No. 698.

Referred to the Sanitary Board for remarks.

(By order.)

FORT ST GEORGE,
19th June 1896.

(Signed) W. W. PHILLIPS,
Ag. Asst. Secretary.

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, 11th June 1896, No. 1835.

With reference to G.O., Mis. No. 938 M., dated 6th June 1896, I have the honour to point out that I have already reported to Government on the question as to whether the existing head works and wells will be sufficient for Trichinopoly—*vide* paragraph 12 of my No. 1559 of 19th May 1896; the head works are, but the wells should be increased in number for Trichinopoly and one extra will be required for Srírangam. The settlement of the question need not therefore be longer delayed. Indeed, it is important it should be settled at once if any work is to be done in the next dry season. Much delay in decision would relegate the works to a following dry season.

From the President, Sanitary Board, Madras, dated 23rd July 1896, No. 115-S.

ABSTRACT.—Returning, with remarks, revised estimate in connection with the Trichinopoly water-supply scheme.

ORDER—No. 1731 M., dated 10th October 1896.

The revised estimate of Rs. 5,18,255 for the water-supply works of Trichinopoly is sanctioned.

2. The excess of Rs. 16,205 in the revised estimate over that sanctioned in G.O., No. 384 M., dated 28th March 1894, will be met as follows:—

	RS.
Grant from Provincial funds	8,100
Contribution from the South Indian Railway	1,880
” ” Military Department (for the Cantonment) ..	730
” ” Public Works Department (for the Jail) ..	230
Municipal Council's share	5,270
Total ..	16,210

The contributions payable by the South Indian Railway and the Military and Public Works Departments have been raised in the proportion of the revised to the original estimate. The additional grant of Rs. 8,100 required from Provincial funds will be disbursed from the sum of Rs. 1,50,000 provided for the Cuddapah drainage works in the budget estimate of Provincial grants for 1896–97. The Public Works Department will be requested to arrange for payment of the contributions now required from the South Indian Railway Company and the Jail, and the Lieutenant-General Commanding the Forces, Madras, for that of the Cantonment, and the Municipal Council will be requested to report how it proposes to meet its share of Rs. 5,270.

3. With reference to paragraph 5 of the Sanitary Engineer's first letter read above, the municipal council will be requested to state whether it wishes to retain any portion of the machinery therein referred to, and if so, how it proposes to meet the cost. The Sanitary Engineer will also report whether there is any other place at which water-works are, or are soon likely to be, in progress, at which the machinery, or any part of it, will be required.

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4. The Sanitary Engineer's proposals in paragraphs 9 to 14 of his first letter read above will be referred to the Municipal Council, Trichinopoly, for remarks, and the council's proposals regarding the extension of water-supply to Worriyur and Puttur, referred to in the Sanitary Engineer's note, dated 17th July 1896, will be awaited.

5. Orders will be passed regarding the scheme of water-supply drawn up for the town of Srírangam on receipt of the municipal council's remarks on it, which should be expedited.

(True Extract.)

A. T. ARUNDEL,
Ag. Chief Secretary.

To the Chairman, Municipal Council, Trichinopoly.
” ” ” Srirangam.
” Collector of Trichinopoly.
” Accountant-General.
” Financial Department.
” Judicial Department.
” Public Works Department.
” Sanitary Board.
” Deputy Adjutant-General, Madras Command.

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Exd. C. M. Thambuswamy.

S. E./6. - 25-2-96 - 1,000.

18

No. 1559

GOVERNMENT OF MADRAS.

OFFICE OF SANITARY ENGINEER,

Fort St. George, 19th May 1896.

A

Jan 17/3/19 & 19/8/96

From

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

To

The Chief Secretary to Government,
Local & Municipal Department.

SIR,

I have the honor to forward herewith revised estimates in connection with the water supply scheme for Trichinopoly, which is approaching completion.

2. The estimate submitted after the destructive floods of 1893 was called a revised estimate, but in reality it was the original estimate for the works as constructed; the estimate now forwarded is therefore the first revision.

What does this mean? BS

3. The accompanying comparative statement shows that the cost of the works as originally proposed, the estimate for which was Rs5,02,050, will be to the participators (if proposals to be made are acceded to) Rs.5,18,255 There are however certain other works which are not included in the original estimate which, for reasons hereafter given, it is now deemed desirable to construct.

4. Dealing with the revised estimate for the works as originally designed, the first item to which I wish to call attention is the last in the estimate, Viz., contingencies, tools & plant &c. The revised figure of Rs.62,167 is made up as follows:-

Contingencies	Establishment------ Rs.39,547
	Other contingencies ,,13,965

Tools & plant {Machinery---------------Rs. 16,755
{Other plant------------ ,, 2,988
, 62,167

The charges for establishment are on the basis that the services of the Asst: Sanitary Engineer will be necessary at least up to the end of September. These charges amount to only 6 % on the estimate, which is very low compared with what is charged and allowed in other departments, but they are nevertheless larger than they would otherwise have been, had not the works (owing to the large amount of water which had to be dealt with in foundations, & to lengthened flood periods) proved much more difficult of execution than anticipated & then extended over a longer time than estimated for.

5. It will be noticed that a deduction has been made from the total of the revised estimate on account of machinery purchased under conditions laid down in G.O., No.1261 M.Mis., dated 19th. September 1895. The cost of the machinery was Rs.16,755,it is now put down at Rs.13,387 or 20 % reduction for two years' use. It is unlikely that the Municipality would find purchasers for it, although they may wish to retain some, and it is hoped Government will take over the balance as it will be useful on future works whether carried out by this department or the Public Works Department. If the Municipality purchase they must of course pay for their purchase from other funds so that all the participators in the scheme are properly credited with their share.

6. Dealing next with the other individual items; revised estimates are attached which show clearly how the extra expenditure has occurred. To go into all the details of each of these would be almost a repetition of the figures in these estimates but I make for the information of Government the following notes as to the main causes for increase:-

(I) Infiltration Wells —— When the works came to be executed the river sand bed has been found to be 5½ feet higher on an average than in the original section (the level varies from year to year) and this required this

excess amount of sinking and building for the three river wells. Again it was found that in sinking the wells the employment of divers was absolutely necessary as when the water was lowered by pumping the wells immediately filled up. In addition to the excess due to the above causes, the rates of the lowest and accepted tender were somewhat higher than the estimates.

(II) Steel pipes to collecting wells —— Though there was a slight reduction in the length laid, the pipe has been laid at a lower level because of the rise in the river bed as already noted and because further consideration rendered it desirable that the pipe which may have to act as a syphon occasionally should have a fall away from the pump well so that any air in the pipe might rise to that end and escape. The greater depth of excavation entailed increases in the cost of pumping and piling .

(III) Raising site & Retaining wall —— There is a slight increase due to an excess length of wall to extend it into the river bank further than was originally thought necessary & to a great depth of wall being necessary at the point of the crossing of the collecting pipe under it, this was not at first foreseen. The lowest tender rates were higher than the estimate rates.

(IV) Diversion of flood banks &c —— Part (Rs110) of the excess is due to the contractor's tender being higher than estimate and part due to a provision for metalling a larger area & length of road to the Pumping Station and Drivers' Quarters than at first proposed.

(V) Screening Chamber —— This shows a slight increase only .

(VI) Main Engine & Boiler House & Engine, Pumps & Boilers —— These are taken together, the expenditure under Engines is less than the original because the amount entered is for Engines alone not including their foundations building round Boilers &c. The excess of Rs2300 is due chiefly to an excess cost of foundations owing to the difficulty of constructing the house on ground undermined by the operation of sinking the Screening Chamber & the Pumping Well and to large beds of concrete having to be formed for building the tower, the engine room floor and foundation for boilers .

(VII) Store & Wood shed ——This shows a small increase of Rs.415. The chief increase is due to excess iron found to be necessary for roof and to the provision of shelves and plastering with cement .

(VIII) Engine Drivers' Quarters ——— This shows a decrease.

(IX) Subsidiary Engine & Boiler House & Engines, Pumps & Boilers. ——— The increase is due chiefly to the excess cost of flooring, to the necessity for raising the the Railway wall & providing a wall to shut in the station from the adjoining buildings & to an extra length of flue over that provided in estimate.

(X) Pipes, Valves &c. —— Increase Rs.1464. It is always difficult to estimate the exact cost of these as small items not provided for and which cannot be foreseen are invariably required.

(XI) Laying & Jointing Pipes &c. — The increase is Rs. 7181. The work is almost completed and the actuals entered. There was considerable difficulty found in laying some of the pipes . At one place a large length of rock had to be blasted, at other places the old fort walls were traversed and the excavation consisted of large boulders & stones which had to be raised by shear legs. A large portion of the excess is due to an extra number of lead joints having to be put in where broken & cut pipes were used instead of turned & bored pipes. Again in laying pipes through the town numerous culverts, drains &c., were encountered that no one knew previously anything of. The excesses are made up of so many small items that it is only by copying out the ledger that they can be detailed to any extent.

(XII) Losses by floods — These stand as in the previous estimate.

(XIII) Contingencies, Tools, & Plant &c.— This item has been already referred to - see para 4.

7. Detailed estimates are forwarded for information.

8. The total excess over original estimate

15-138

if the above figures are accepted, amounts only to Rs16205 or little over 3 % . I venture to say that for a class of work where so much water had to be dealt with this is not an unsatisfactory result, especially as for long periods divers with diving dresses have been employed & much steam pumping done . I cannot say that the contractor will consider the result so satisfactory for he has had to increase his proposed expenditure very considerably in many cases & while the estimate in some particulars is increased to mee some of the charges for extra work it has not been deemed equitable to allow for other cases where extra work was no ordered but unforeseen expenditure was incurred.

9. At the foot of the comparative statement will be found three additional works proposed

Native staff quarters	Rs.	3800
Fencing around Pumping Station	,,	2450
Additional well &c.	,,	12064
	Rs.	18314

10. The pumping station is so far away from Trichinopoly town (about 2 to 3 miles) that it will not be expedient for the coolies employed on the pumping stat to traverse that distance daily & it will be advantageous to erect native staff quarters to keep the men on the pre mises , the necessity for construction of such quarters i one about which there is little doubt , & about the expec ency of which there is none .

11. It is also desirable to fence the Engine Station to keep out intruders & protect properly fuel &c Steel pale fencing is proposed .

12. The third item is also recommended . Pump has been going on for sometime . The season is no doubt abnormal one & is one therefore in which a good test has been possible as the water has seldom if ever been so lo in the Cauvery bed . From the three wells the possible s ply without lowering the water more than 5 feet (below that sand blows into the well) is 750 gallons per minut

13. At present the quantity required for all parties is

Town —————— 600,000 gallons
Military —————— 42,000 ,,

Railway --------------	100,000	gallons
Jail -----------------	15,000	,,
	757,000	per 24 hours
	378,500	½ in six hours
	63,083	in one hour
	1,051	in one minute

One more well will be required, the town will not take probably more than half 600,000 gallons at first & of course immediately the river even slightly rises the supply will be sufficient but I recommend strongly that during next dry season another well be constructed (this is altogether apart from the one recommended for Srirangam).

14. The cost of the above items if approved by the participators should be borne in the prearranged proportion by the various contributors to the scheme. Taking it that Government will approve of the additional items & of the sale of the machinery, the total of the new estimate would stand at Rs.5,36,569 & the excess payments would be thus :-

	Percentage	Estimate as now submitted	Previous estimate	Excess
		Rs.	Rs.	Rs.
Municipality ----	82.5	442669	414120	28549
Railway ---------	11.6	62242	58340	3902
Military --------	4.5	24146	22670	1476
Jail ------------	1.4	7512	6920	592
	100	536569	502050	34519

If Government pay the usual amount of Rs. $\frac{34519}{2}$ = Rs. 17260 the amount of loan to be raised by the Municipality willbe Rs. 28549 — 17260 = Rs. 11289 at 5.96 % = 673.

* Letter No. 1515, dated 4th. May 1896, from the Chairman, Municipal Council, Trichinopoly, to the Sanitary Engineer to Govt., with an Extract from the Proceedings of the Municipal Council under [illegible] 30-4-[illegible]

Letter No. 1508 of 15-5-96 from the Sanitary Engineer to Govt., to Chairman, Municipal Council, Trichinopoly.

15. Another item not as yet referred is the construction of a service reservoir. This ~~has been entered~~ is referred to because of the desire of the Municipality (Vide correspondence noted in margin* attached). The whole cost of the reservoir Rs. 70,000 should be borne by the Municipality less any grant Government may propose to make.

16. If however the town of Srirangamm enters the scheme the proportionate cost shewn in table in para 14 will be materially altered & no increased contribution whatever willbe required from the participating parties.

17. In my No. 407, of 10th. February 1896 I estimated that the proportionate cost of the head works which Srirangam would have to bear would be Rs. 53853. Seeing that for Srirangam another well must be provided, for its sole use, the proportionate cost of the head works may be calculated as 25 % of the following :-

Raising site & Retaining wall ----------------	Rs.	15340
Diversion of flood banks ----------------------	,,	2000
Screening Chamber -----------------------------	,,	17500
Main Engine & Boiler House & Engines & Pumps	,,	95400
Store & Wood Shed -----------------------------	,,	2800
Engine Drivers' Quarters ----------------------	,,	6200
Native staff quarters -------------------------	,,	3800
Fencing around Pumping Station ----------------	,,	2450
		145490
25 % of the above -----------------------------		36372
Add 15 % for contingencies &c. ----------------		5455
		41827
Proportionate cost of Main --------------------		22706
		64533

---

* This figure is instead of Rs. 53855 appearing in table in my No. 407 quoted above & which appears to have included a proportionate cost of the whole of the head works including wells & collecting pipe & not now included as not fairly debitable, as Srirangam will obtain a supply from its own well alone. This would make the cost of the Srirangam scheme only Rs. 64533 + 96540 = Rs. 161073 instead of Rs. 175099

Cw 519 [illegible]/96

The above sum is much above the excess shewn in table in para 14 so that if Srirangam enters the scheme the excess would be entirely met without drawing further sums from contributors & there would be a balance of Rs. 64533 — 34519 = 30014 in their favor.

18. An early decision as to Srirangam & other points above mentioned is therefore desirable.

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

Sanitary Engineer to Government.

S.E./4 25-5-94-500.

1486 M

Cue 1473 M/96
End. 268/96
471 M 19-3-96
389 M 28-3-94
37 M 16-1-94
1639 M 29-11-92

1264

58

Register No. 2241
19 JUN.

C.S.

1896.

no. 698

Referred to the Sanitary Board for remarks.

Fo 16.6.96 (By order)

W W Phillips
Ag. Assistant Secretary

15.6.96

From

The Sanitary Engineer
to Government,

To

The Chief Secretary to Govt.,
Local& Municipal Department
Fort St. George, Madras

V.R.
13/6/96
Fort St. George
19th June 1896

No. ~~1559~~

Dated 19
Despd. 19 } May 1896.
Recd.

MAY. 96

Enc. 4 5

Subject.

Trichinopoly Water Supply Scheme.

Submitting for orders revised estimate in connection with the —

To
The Joint Secretary, Sanitary Board, (Engineering Branch).

(with endt)

1/6 a/96

S.E./6. 25-2-96-1,000.

No. 1835

19/68

G.O. No. 1672 M.

GOVERNMENT OF MADRAS.

OFFICE OF SANITARY ENGINEER,
Fort St. George, 11 June 189

From

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

To

The Chief Secretary to Government,
Local & Municipal Department.

SIR,

With reference to G.O. No. 938 M.Mis., dated 6th. June 1896, I have the honor to point out that I have already reported to Government on the question as to whether the existing head works & wells will be sufficient for Trichinopoly- vide para 12 of my No. 1559 of 19th. May 1896; the Head Works are, but the wells should be increased in number for Trichinopoly & one extra will be required for Srirangam. The settlement of the question need not therefore be longer delayed. Indeed it is important it should be settled at once if any work is to be done in the next dry season. Much delay in decision would relegate the works to a following dry season.

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

Sanitary Engineer to Govt.

21/6

Local & Municipal Dept.
CURRENT No. 1896

From

The Sanitary Engineer
to Government

To

The Chief Secretary
to Government
Local & Municipal Dept

No 1835

Dated 11 }
Desp 12 } June 1896
Received

Enc —

Subject

Trichinopoly Water Supply

Informing that report was already made to Govt on the question as to whether the existing head works & wells will be sufficient for—

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938 L&M 6-6-96
C No 1486 M/96

C.S.
misc.

Order

The Sanitary Engineer will be informed that the question of supplying the town of Srirangam with water from the Trichinopoly works can be settled only on receipt of the report which the municipal council of Srirangam has promised to submit after the scheme has been actually at work in Trichinopoly for some months during the dry season.

V.R
18/6/96

Let it be over
It does not
much matter
2/6

To

The Sanitary Engineer.

L. & M.
300-5-8-96.

Local & Munl. (189) Department.

CURRENT No. 2187 M.

Order

From
The President, Sanitary Board

No. 1155

Dated 23.7.96
Received 27.7.96
Registered
Enclosures 2 & C No. 1486 M. ref
Spare copies

SUBJECT.

~~Returning with remarks~~
A revised estimate in connection with the Trichinopoly Water Supply Scheme.

10/9
17/9

BACK PAPERS.

G.O.	No.	Department.	Date.

FURTHER PAPERS.

G.O.	No.	Department.	Date.

No. 269
S.B

10

23

To the President Sanitary Board.

I consider the making of a reservoir very des
I however regard the proposal as ill-timed. I
existing scheme for Trichinopoly the suburbs of
Puttur, and Tenur, are not supplied. This
serious sanitary defect, and I think that if the C
are able to raise funds at all at the present time
should be their first care, and the reservoir might
duly follow in the future.

2-- Mr Oldham declares that the site on the rock
ed by him would secure the required head for
part of the city, suburbs, and cantonments ".
ing that he was in error in his calculation-
being shown by the Sanitary Engineer that this sit
will only command half the town - it should be poss
to select another site on the rock that should give
amount of required head. Mr Oldham declared the
would afford excellent building material, and irrespe
ive of the possibility therefore of placing the reser-
voir at any required level, economy may perhaps be ser
ved.

3-- I suggest for consideration that the supply of
Trichinopoly suburbs be taken up with the Srirangam
scheme and th [illegible] existing Trichinopoly scheme
[illegible]

Sanitary Co.

disregarded in this connection . The relati

tion of Warriore and Srivangam suggest the feasibility of a separate scheme for these being more convenient than the presenn combination .

San Com

26/6/86 G.O. No. 1125. d/15 July 8

To The Sanitary Engineer with Connected papers retd

For remarks.

President, Sanitary B.

1/2187

GOVERNMENT OF MADRAS,
Office of Sanitary Engineer to Govt.,
Fort St. George, 17 July 1896.

OFFICE NOTE
BY
THE SANITARY ENGINEER.

Since my estimate was submitted Municipality has decided not to have servoir ; the scheme is complete with t it. But even were this not so it is dly necessary to discuss the reservoir e . The Engines cannot pump up to Mr. ahm's site & any site lower on the would be much more expensive . The cil are going to apply to Government the extension to Worriur & Puttur, but has nothing to do with the revised, mate now submitted . Even if it had e no relation between Srirangam and riur which lie miles apart & on oppo- e sides of the town .

The question before the Board is approval or disapproval of the revised imate. Some early decision as to this requested . The works are almost com- e & the cost is as shown . Until the mate is passed I cannot pay contrac - bills & as I am anxious to close accounts I t the matter will be no longer delay-

The question as to whether Sriran- be supplied with water or not is one for Government to decide he es -mate for that town is already before them.

Sanitary Engineer to Government

To

The President,
Sanitary Board.

2/2187

12

27

Local & Municipal Dep

CURRENT No. 2187 M

Sanitary C. NO. 118.

Note by the President, Sanitary Board:-

No 115 S. dated 23d July 1896

The revised estimate for the--- water supply of Trichinopoly as submitted by the Sanitary Engineer --- amounts to Rs. 5, 18, 255 showing an increase of 16, 205 or a little over 3 per cent on the original estimate of Rs. 5, 02, 050.

2. The Sanitary Engineer has given detailed explanation for the excess in each case and taking into account the nature of the work, I think the explanations are satisfactory, and that the estimate should be sanctioned.

3. As regards the additional works proposed they seem to me to be very desirable, but it is for the Municipal Council to decide if they are to be carried out.

4. In reference to para 15 of Mr. Jones' note, it seems that the Municipality has since decided not to have a reservoir, vide his note d/ 17th July.

5. There are no papers in the file relating to the subjects mentioned in paras 16, 17, and 18 of the letter from the Sanitary Engineer. I am therefore

therefore unable to give any opinion on them, but it is believed that the estimate for water supply to the town of Srirangam is now before Government; this, however, appears to be quite unconnected with the revised estimate submitted by Mr. Jones and to which he asks sanction.

Campbell Col. R. E.,
President, Sanitary Board.

Ex 8/96

27 JUL. 96

The Local & Municipal Dept. with
reference to its endorsement
No. 698 d/19th June 1896 &
papers in original
returned.

29

S. E. / 33. 500—30-10-95.

SANITARY COMMISSIONER WITH THE GOVERNMENT OF MADRAS.
Register No. 2114
20 JUN. 96

GOVERNMENT OF MADRAS,
Office of Sanitary Engineer to Govt.,
Fort St. George, 19. 6 1896.

OFFICE NOTE
BY
THE SANITARY ENGINEER.

Trichinopoly Water Works

Reference by Govt. No 698 of 19.6.96.

The Revised estimate is circulated to the Members of the Sanitary Board.

Secy S.B.

To the Sanitary Commissioner with Madras
the Presdt S.B. 26/6/96

Disp 1731 M
18-10-96

1672 M 31

NOTE FC THE ASSISTANT SECRETARY.
(Not for Record.)

The C. S. has initialled the draft order on C. No. 1672 M. Instructions are requested as to whether the order may be issued or whether the paper should lie over as proposed by the A. S.

V.R.
19/6/96

21.6.96

---

reservoir is
roving the Govt
s kindly furnish
oir on the rock
favor us with
rive advantages

garavelu
hairman

neer to Govt Madras

The Revised

Circulated

of the Sanitary

St.

To the Sanitary

the Pres

Extract from the Proceedings of the Municipal Council, Trichinopoly passed at the meeting held on 30th April 1896

Para. 19 - Read memo of the Chairman suggesting that a resolution be passed commending to Govt. for favorable consideration the subject of providing a reservoir without which the water works would be incomplete.

x x x x x

The Council considers that a reservoir is absolutely necessary. But before moving the Govt. it requests the Sanitary Engineer to kindly furnish alternative estimates for a reservoir on the rock and the Post office respectively and to favor us with his opinion pointing out the relative advantages and disadvantages of the two sites.

/Sd/ O. S. Singaravelu
Chairman

/ True Copy /

Forwarded to the Sanitary Engineer to Govt. Madras for information.

/ True Copy /

/Sd/ O. S. Singar

Trichi. Munl. Office

No. 515

Municipal Office

Trichinopoly, 4th May 189

From

M. R. Ry.

P. S. Singaravelu Pillay Avl

Chairman,

Municipal Council, Trichinopoly

To

The Sanitary Engineer

to Government, Madras.

Sir,

I have the honor to inform you that the Council consider that the water works of thi town will be incomplete so long as there is n arrangement for a reservoir capable of holding at least two or three days' supply and wish t bring the subject to the notice of Government f its favorable consideration. Before doing so, I am desired by the Council to request you to be good enough to furnish them with alternative estimates for the construction of a reservoi in connection with the water works scheme on the Rock and on a site close to the cantonmen Post Office respectively. They further request you to favor them with your opinion i the relative advantages and disadvantages the two sites. A copy of their resolution is closed.

I have the honour to be
Sir
Your most obedt. Servt.
/Sd/ S. S. Singaravelu Pillai
Chairman

/True Copy/

Sanitary Engineer to Govt.

A3 1559 of 1896

From

The Chairman,
Municipal Council,
Trichinopoly.

To

The Sanitary Engineer
to Government
Madras.

No. 1515

Dated 4th May 1896

Enc. 1

SANITARY ENGINEER TO THE GOVERNMENT OF MADRAS.
Register No. 2244
1

Subject

Service Reservoir

Requesting to furnish the Council with alternative estimates for the construction of a ——— in connection with the Water Works scheme of Trichinopoly.

S.E./6.–25-2-96–1,000.

39

No. 1508

18

(13)

Government of Madras.

Office of Sanitary Engineer,
Fort St. George, 15th May 1896.

From

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

To

The Chairman,
Municipal Council, Trichinopoly.

Sir,

I have the honor to inform you that I have considered your No. 1515 of 4th May 1896. I agree wit you that a reservoir will make the scheme mo complete and I find that the best place for it will be the open high ground adjoining the Pos Office. The proposed site at the Rock Fort is 20 fee lower than that at the Post Office and a reservoir erected there would command only about one half the town.

2. Taking it therefore that the reservoir must be near the Post Office the first point t consider is what capacity it ought to be. This point depends I suppose chiefly on financial considerations. It is one therefore for the Council to decide. A reservoir for a thr

g's supply is I think out of the question. reservoir to hold 1,000000 gallons would cost s 54,000 - and one to hold 200000 gallons would ost about 16,500.

A reservoir on the site proposed will ommand all the town including the Pioneer nd 23rd Regimental Lines (but not the Railway r Jail) and supposing that a day's supply mounts to say 900000 gallons for the town nd 42,000 for the Military or say 942,000 gallons n 24 hours the night supply required would ot exceed 1/3 of this amount or say 314,000 allons, so that a reservoir of 1000000 gallons ould hold practically three nights' supply or bout one day's supply.

It may be necessary to pump at ight to the Railway Tank and the Jail and therefore to admit of that operation going on at the same time as the town is getting a supply from the reservoir also to allow the town to be supplied from the reservoir during the day in case such necessity arose it will be necessary to lay a second main from the reservoir as far back as the Sub Pumping station about 3800

This will require to be 9" diameter and will cost about Rs $\overset{19}{16000}$, so that the total cost will amount to Rs 54,000 + Rs 16,000 or Rs 70000 if Government pay half the cost will be per annum about $\frac{70000}{2}$ @ 6% = Rs 2100.

41

5. I am now preparing the revised estimate and should the Council desire this to be included I shall be obliged by an early resolution to that effect but Government should be similarly advised. This reservoir will not benefit other parties to the scheme to any great extent and I think therefore the cost should be borne by the Municipality entirely less any grant Government see fit to make.

I have the honour to be
Sir
Your most obedt Servt
(Sd) J. A. Jones
Sany Engr to Govt

(True Copy)

Sanitary Engineer to Govt

20/1

34 1559 of 1896

1896

From

The Sanitary Engineer
to Government

To

The Chairman,
Municipal Council,
Trichinopoly

No. 1508

Dated 15th May 1896

Subject

Service Reservoir

Forwarding his proposals regarding the construction of the ———.

Sanitary Engineer to the Government of Madras
1241
1

R25/7

LOCAL AND MUNICIPAL DEPARTMENT.

[5]
—6-4-96.

43

Papers to be read in Proceedings :—

Revised Estimate — Trichinopoly Water Supply

Again G.O., dated 189 , No.

Current No. 1486 M. of 1896, dated 19th May 1896 from the Sanitary Engineer.
Current No. 11723 of 1896, dated 11th June 1896 from the — do — the President, Local Board,
— 2187 M. — — 23rd July 1896

Order. No. 1731 Mdl 10·10·96

Hm.
P. S.

See in

The revised estimate of Rs. 5,18,250 for the water supply works of Trichinopoly is sanctioned.

2. The excess of Rs. 16,205 in the revised estimate over that sanctioned in G.O. No. 354 M. dated 28th March will be met as follows:—

	Rs.
Grant from Provincial Funds	8,100
Contribution from the South Indian Railway	1,800
Contribution from the Military Dept. (for the cantonment)	750
— do — do — P.W.D. (for the jail)	280
Municipal Council's share	5,270
Total Rs.	[illegible]

The contributions payable by the South Indian Railway and the Military and Public Works Departments have been raised in the proportion of the revised to the original estimate. The additional grant of Rs. 8,100 required from Provincial Funds will be debited from the sum of Rs. [illegible]

C. S. for approval of the addition made to para — [illegible]

approved
A.H. 1.10.96

Issued
7.10.96

vided for the Cuddapah drainage works in the budget estimate of rovincial Grants for 1896-97. The ublic Works Department and the ieutenant General Commanding the Forces, Madras, will be requested to arrange for payment of the contributions now required from the South ndian Railway Company & the Jail, ~~that contribution required from~~ the Cantonment, and the municipal council will be requested to report how it proposes to meet its share of Rs. 6,270.

p that ?

3. With reference to para. 8 of the Sanitary Engineer's first letter read above, the municipal council will be requested to state whether it wishes to retain any portion of the machinery therein referred to, and, if so, how it proposes to meet ~~that~~ the cost. The San. Engr. will ~~however~~ also report

Here I think (so far as I can understand the matter) we shd. ask the San: Engr. whether there is no other place at which water works are, or are soon likely to be, in progress, at which the machinery will be required.

WB
24/9/96

whether there is any other place at which water works are, or are soon likely to be, in progress, at which the machinery, or any part of it, will be required.

pass orders

WWD
28-9-96

ASA 6.10.9

4. The Sanitary Engineer's proposals in paras 9 to 14 of his first letter read above will be referred to the municipal council Trichinopoly for remarks, and the council's proposals regarding the

---

riyur and Cutter, referred to in the Sanitary Engineer's note dated 17th July 1896, will be awaited.

95
45

5. Orders will be passed regarding the scheme of water-supply drawn up for the town of Srirangam on receipt of the municipal council's remarks on it, which should be expedited.

VR
18/9/96

WWD
22-9-96

ASA 23.9.96

To,

The Chairman, M.C., Trichinopoly. ✓
" " Srirangam ✓2
" Collector of Trichinopoly ✓3
" Accountant General. ✓7
" Financial Department. ✓1
" Judicial — do — ✓2
" Public Works Department. ✓9
" ~~Joint Secretary~~, Sanitary Board, ✓6
~~Engineering Board~~ ✓6
" Deputy Adjutant-General, Madras Command.

Despd 30/10/96

Copy sent to Press. 12-10-96

ned for signature. 30-10-96

atched in print. 30-10-96

G.O. No. Dated

189

Number of copies required.
Order complete. 80
Letter only.
Order complete with Letter.

10

1486m — A/
1072m — A/p/
2187m —

No. — (10)

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Set in style and proof sharp please.
9/10/96

GOVERNMENT

WITH DITTO.

NOT THROWN UP BEING MEANT FOR ENGRAVING IN ORIGINAL.

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27.9.29 BM

24.7.31 V

1-4-32 B.V

8.6.32 V

25.8.34 BM

28-9-31 V

16.4.58 BM