

13TH AUGUST 1888, No. 899 M., LOCAL AND MUNICIPAL.

GOVERNMENT OF MADRAS.

LOCAL AND MUNICIPAL DEPARTMENT.

READ—the following papers:—

From W. S. BETTS, Esq., Agent, South Indian Railway, to the Consulting Engineer for Railways, Madras, dated Trichinopoly, 31st May 1888, No. 458.

Your letter No. 312, of the 15th instant. You are aware that in my letter No. 694, of the 24th January last, addressed to the Managing Director, I reported to the Board upon the subject of the water-supply at Trichinopoly. In reply, thereto, the Managing Director informed me (letter No. 700, dated 2nd March last) the Board approved of the proposal for obtaining an unfailing supply of good water from the river Cauvery.

2. The Directors further suggested that it might be desirable to ascertain whether by an extension or enlargement of the proposed scheme, the same source would not supply the town of Trichinopoly with water, and so reduce the expense of the company, and even perhaps in time produce a profit sufficient to repay the outlay, and whether if this be practicable the municipality would join in the expense.

3. I have discussed this suggestion with the Collector of Trichinopoly, and I understood him to say he was prepared to recommend the municipality to agree to take part in a joint arrangement with the South Indian Railway Company for obtaining a supply of water from the Cauvery. It was suggested that the construction of the wells, the obtaining of the requisite pumping engines, piping, &c., should be undertaken by the company and that the cost thereof should be borne by the company and the municipality in proportion to the quantity of water estimated to be required by each. The working and maintenance of the engines, pipes, &c., should be undertaken by the company, and the cost thereof borne in like manner by the municipality and the company.

4. Since that discussion I understand the Municipal Commission has considered the rough lines of a project estimated to cost Rs. 2,50,000; they have approved of the matter being gone into in detail; have found the necessary funds for carrying the proposal out; and, I believe, the matter will be placed before Government in the Local Fund and Municipal department in the course of a few days.

5. I now wish to ascertain if Government will sanction a joint arrangement of this kind being entered into; if sanction be accorded, then the whole scheme should be gone into in detail and the necessary legal documents drawn up.

6. I send herewith a tracing showing how the Chief Engineer proposes to carry out the arrangement for obtaining from the Cauvery a supply of water to meet the company's requirement only. The cost of this is estimated at Rs. 57,742.

No. 202.

Submitted for the consideration of Government.

2. The proper supply of water to Trichinopoly junction station for locomotive and other requirements has been a source of anxiety for many years past. The whole question is fully set out in the Agent's letter to his Board of Directors, No. 694, dated 24th January 1888, and much consideration has been devoted to the various proposals for remedying the present unsatisfactory position of affairs.

3. Water is now obtained from the Wyacondan channel, where a pump is kept constantly at work in delivering water through pipes rather more than a mile in length into the locomotive tank-house, any surplus water finding its way into a reservoir designed to store a supply sufficient to meet all wants during the periods when the channel is closed for repairs or silt clearance. This scheme was adopted as being the cheapest, and also as having the advantage of being capable of extension at any future time with the loss of only a small portion (that representing the cost of the reservoir) of the original outlay.

4. As stated in the correspondence, the arrangement has not proved entirely satisfactory, and in some years difficulty has been experienced in providing a sufficiency of water to meet ordinary locomotive requirements. At an important junction, where traffic is steadily increasing, it is very undesirable that such uncertainty should exist, and, after full discussion, it has been decided to recommend the extension of the piping for a distance of $2\frac{1}{4}$ miles to the Cauvery river, where an unfailing supply can be obtained. This would also provide good drinking water for the company's servants, and for station purposes.

5. The cost of the original scheme was Rs. 25,000 and its extension, including the provision of new and more powerful pumps, and the sinking of wells in the river-bed, is estimated at Rs. 57,742.

6. The Board of Directors suggest that it might be desirable to ascertain whether the proposed scheme could not be advantageously enlarged to include the supply of the town of Trichinopoly.

A similar proposal is mooted in the letter * from the Chairman, Municipal Council, Trichinopoly, embodied in proceedings of Government, dated 18th April 1888, No. 372 M., Local and Municipal. The Agent understands that the Municipal Commission has considered the rough lines of a project estimated to cost $2\frac{1}{2}$ lakhs, and that the matter will shortly be placed before Government.

7. Mr. Betts now asks whether the Government would sanction a joint arrangement of this kind being entered into. The only objection which I see to it is the delay which will probably occur in carrying out the larger scheme. The matter might, however, be referred to the Local and Municipal Department, who will soon be in possession of the proposals of the municipality. Should the Government decide in favor of a joint scheme, it will be necessary for the South Indian Railway Company to enter into an agreement with the Municipal Council as to the means to be adopted for carrying out the work, the provision of funds, the division of original cost between the railway and municipality, and the division of working charges. It appears desirable that the working arrangements should be in the hands of the Railway Company, who have a trained mechanical staff always available.

(Signed) W. H. COAKER, Major, R.E.,
Offg. Consulting Engineer for Railways.

No. 357-D.

Referred to the Local and Municipal Department for favor of remarks.

OOTACAMUND,
22nd June 1888.

(Signed) W. H. COAKER, Major, R.E.,
Ag. Joint Secy. to Govt., P.W.D.,
Railway Branch.

No. 586.

Referred to the Municipal Council, Trichinopoly, for early report.

(By order.)

MADRAS,
12th July 1888.

(Signed) W. S. MEYER,
Asst. Secy. to Govt.

From W. A. WILLOCK, Esq., Acting Collector of Trichinopoly, to the Chief Secretary to Government, dated Trichinopoly, 20th July 1888, No. 63—2.

I have the honor to forward, herewith, a report from the Trichinopoly Municipal Council regarding a water-supply project for the town to be carried out conjointly with the South Indian Railway.

2. The report explains what it is proposed to do clearly. Of course, no detailed estimates have been prepared, and the statement of cost is only approximate. Messrs. Oldham Brothers will, I understand, charge 3 per cent. on the outlay for preparing the detailed plans, and 3 per cent. for the execution of the works. This is included in the estimated cost of Rs. 2,50,000, which provides 12 per cent. for this purpose, and for contingencies.

3. Interest, sinking fund and depreciation have been taken at $7\frac{1}{2}$ per cent. I observe that the South Indian Railway allows $7\frac{1}{2}$ per cent.

4. The whole question is one of funds, and, unless Government can assist, I fear that the project will be wrecked, as the municipality will hardly be able to borrow in the open market on terms such as those on which their calculations are based. I hoped to have been able to arrange matters with the Pudukótta State, which has a large balance invested in Government paper, but have been unable to do so. The security is good enough; but money lent to a body like the Municipal Council is necessarily tied up in a manner which investors do not like to submit to. The project is one which the Council can, I believe, safely undertake, if funds can be obtained at the rates assumed, as their present expenditure is fully met by their income and could be economized somewhat; but an increase of a few thousands of rupees per annum would be more than they could easily undertake. I need hardly call attention to the disastrous consequences of leading matters, as they are at present, further than to mention that in six weeks in last December and January about 1,200 deaths from cholera took place within municipal limits. On some days, the death-rate exceeded 70. The report shows tolerably clearly that but little improvement can be effected by anything short of a sum which the Council could only provide by repayments spread over a long course of years. A few faults might be remedied without a loan; but whether any material improvement would be effected thereby is very doubtful. No proposals regarding a drainage scheme are forwarded, as it is considered that a good water supply must be secured first. The drainage is capable of gradual improvement from surplus revenue, should funds for a complete scheme be impossible to provide hereafter.

5. In conclusion, I would call attention to the importance of the present opportunity being made use of. Joint action with the South Indian Railway Company will be an immense advantage in the management of the pumping station, and, unless immediate action can be taken, this chance will be lost.

6. I forward, in a separate parcel, a plan of the municipality, showing the area to be supplied with water, and a few of the principal levels, &c. The mean water level in the Wyacondan channel at Dark's bridge is taken to be 100 feet above datum.

ENCLOSURES.

REPORT on the Trichinopoly water-supply project.

The water-supply of the town of Trichinopoly is at present derived from the Wyacondan channel, which traverses the southern extremity of its main portion at a level about 28 feet above that of the bed of the Cauvery. The site of the old fort, the most densely-populated and important part of the town, occupies a ridge running north and south between the channel and the rock and sloping gently towards the east and west. The system, under which this part of the municipality receives its water-supply, is very simple. Two main supply channels take off from the Wyacondan at suitable points opposite the two slopes of the ridge just referred to and run parallel thereto towards the river. From these channels, branches run in underground tunnels towards the ridge and discharge into series of deep reservoirs amongst the houses from which he

water is drawn for use. The primary channels are mere open streams and are of course in a position to intercept the drainage from the town, and though arrangements have been made to pass it underneath them these are of a very partial nature. The channels have also been much neglected and their banks have at times been little better than public latrines. South of the Wyacondan channel, and on the continuation of the ridge on which the fort stands, are two populous areas known as Shengolam and Marsackpetta, which abut on the European and Military portion of the municipality. They have practically no water-supply at all and are about the most cholera-stricken localities in the whole town. The water project, now under consideration, is intended, in the first instance, for the supply of these areas, the population of which is about 64,000.

The disadvantages, from which the water-supply described above suffers, are the following :—

1st.—It is drawn from the Wyacondan channel at a point about 18 miles from its origin. Throughout this distance, it runs nearly parallel to the Cauvery, receiving all the land drainage which would otherwise flow into the river. The existence of several villages on its banks on the inland side and the fact that it is commonly used for washing and similar purposes throughout its length add to this disadvantage and render its water extremely impure before it reaches Trichinopoly at all. Its supply is also uncertain and scanty in the hot season, when the channel sometimes has to be closed for repair.

2nd.—The open channels, which conduct the water from the Wyacondan to the town system of tanks, are terribly liable to pollution and receive a considerable proportion of the drainage of the town in wet weather.

3rd.—The levels only allow of the water being delivered into deep tanks amongst the houses into which there must be a large amount of infiltration of drainage from the subsoil which has been permeated by the leakage from cess-pools and subject to other causes of pollution for ages. The tunnels which connect these tanks pass through most objectionable localities (one runs under a large burial-ground) and the sediment which accumulates in them is of a very foul description.

In the Chairman's letter, No. 7, dated 10th May 1887, the Municipal Council applied to Government for the services of an Engineer to investigate a water and drainage project; but, in their order in reply, Mis. No. 702-M., dated 27th July 1887, the Council was directed to make its own arrangements for securing the services of a qualified person for the purpose. Advertisements were accordingly published and a large number of applications were received; but, as the engineering would be a waste of money and as none of the applicants appeared to have any special qualifications of the sort, nothing further could be done at the time. Subsequently the Acting Collector succeeded in securing the services of Messrs. Oldham Brothers of Calcutta for the work under circumstances which provided for all that could be desired in the way of special knowledge on the subject and arrangements were made for a short visit from Mr. R. Oldham in April last. Meanwhile levels, which had been taken by Mr. Drake-Brockman some years before in preparing his drainage scheme, were connected with the most important points on the channel and the Cauvery and plotted on the large scale municipal map and all arrangements made to facilitate his investigations.

The first question which had to be considered was whether the defects in the existing system could be remedied at a moderate cost and the advantage offered by the commanding position of the Wyacondan channel (28 feet or so above the river) utilised. The leading faults of the present system have just been described. The conclusion arrived at as regards each was as follows :—

The first may be regarded as beyond control. The water in the Wyacondan channel might possibly be conserved against pollution arising from using it for washing purposes and the like; but the physical features of the country render it impossible to avoid its being the recipient of the drainage from the south throughout the whole of its course.

The second source of pollution might be ameliorated a good deal by the construction of new supply channels (the site of the present ones is saturated with filth) with proper arrangements for passing drainage under them. It would, however, always have to be an open channel, as the fall is too small to allow of pipes of any reasonable dimensions being used.

The third defect could only be remedied by the establishment of a pumping station on the Wyacondan channel to allow of the delivery of water on a reasonable level (which would also get over the second drawback).

The possible improvement on the present system, without pumping operations, is therefore confined to a small measure of conservancy in the upper course of the Wyacondan—a measure which would be resisted, very possibly successfully, by the inhabitants of the adjoining villages—and the reconstruction of the two primary supply channels. This would effect a considerable improvement; but it would still leave the supply very foul and dangerous to health, and localities, would be left as badly off as ever. If pumping operations are resorted to, all the defects except those due to want of conservancy of the Wyacondan and occasional scanty supply would disappear, but, roughly speaking, the cost of such a system would only fall short of that of one

relying directly on the Cauvery itself by the cost of somewhat more powerful engines and a slightly longer main pipe. At first sight it may appear that there would be a large saving in piping in favor of the former, but this would not be the case unless a reservoir were dispensed with, as the nearest site for one would be the high ground in the cantonment south of the channel; whereas with a system drawing its supply from the river, the Trichinopoly rock itself would afford an excellent site not far out of the line the main pipe would naturally adopt. A reservoir might of course be dispensed with, but a system of delivery in pipes without one would be a very dangerous one, as the slightest accident to the machinery would force the population to resort to the wells and tanks which had fallen into disuse and become foul.

A project of pumping from the Cauvery being thus shown to be the only reasonable solution of the problem, its main features follow as a matter of course, viz., a pumping station for the collection of the water required from wells in the bed of the river, a reservoir on a suitable position on the rock and a system of distributing pipes therefrom. The position which the wells should occupy is settled by the Kodamurthy river which runs into the Cauvery about $\frac{1}{2}$ of a mile above the Cauvery bridge. This river drains, amongst other areas, the densely-populated and cholera-infested tract between the Wyacondan channel and the Cauvery and its drainage must therefore be avoided by placing the wells above its junction. From this point no drainage falls into the Cauvery for a distance of 15 miles up its course. The main would follow the course of the railway up to the Fort station, where it would turn to the east and run along the southern face of the rock to its south-eastern corner. Here, on a slightly sloping shoulder about 50 feet above the ridge on which the town is built, is an excellent site for a reservoir. A certain amount of quarrying will be necessary to level the floor, but this will not be a serious source of expenditure, as the stone removed will be required for the walls of the cistern. It would probably be found advisable to construct it of a size to hold three days' supply, or 19,20,000 gallons, at 10 gallons per head per diem which would be equivalent to a depth of 16 feet over an area of 200 feet $\times$ 100 feet. From this the distributing system would run to the parts of the town mentioned above. The European portion of the cantonment would, of course, be omitted as would also be the Regimental lines, but a supply to the latter could be arranged for, if the Military Department thought it worth the expenditure. The western suburbs of Puttur, Tennur and Worriore would also be excluded for the present, but this would only be a temporary deprivation, as the engine, main and cistern would be capable of supplying them also. The extension of the scheme to this part of the town is postponed merely to keep the size of the original project within bounds. A supply will be afforded to these sections—as far as the water-rate they can contribute will allow—as soon as the main project has been got into working order. It is not proposed to filter the water, because this would involve two pumping operations, the cost of which would be prohibitive. It is hoped, however, that infiltration through the bed of the river into the wells will of itself go far towards filtration. The quality of the river water also has not been ascertained by analysis, but it is not thought necessary to delay the execution of the scheme for this purpose, as the river is the only supply available. It does not require analysis to show that it is purer than that of the Wyacondan channel, the only other possible source of supply.

The possibility of a combination with the South Indian Railway Company was discussed with the Agent and Chief Engineer by the Acting Collector and Mr. Oldham, and there appears every reason to suppose that an arrangement can be made. The form it would probably take would be that the municipality and railway company would contribute towards the cost of the wells, pumping station and the main as far as the Fort station in proportion to their requirements, while the remaining works needed by each would be separately provided for. The company would probably desire to have the working of the pumps in their hands—an arrangement which would be very advantageous to the municipality, as it would place the mechanical resources of the railway at their disposal. The working expenses would be divided between them in fair proportions.

Mr. Oldham's estimate of the cost of this scheme may be taken at Rs. 2,50,000. A deduction would probably have to be made from this for the share of the head works chargeable to the railway company, but the information supplied on this point is not very clear and the Council think it safer to adopt the larger sum. The working expenses for the complete scheme—including the extension to Worriore, Puttur and Tennur—are set at Rs. 12,000 per annum. This includes the share payable by the railway company. For the more limited project, which it is proposed to undertake in the first instance, Rs. 8,000 may be set down as the proportion to be paid by the Municipal Council. If the project is extended, it should be on the understanding that the additional water-rate will cover the increased expenditure. Supposing the capital required can be raised at 6 per cent., including sinking fund, as the Council hope to be able to do, the annual cost of the scheme will be as follows :—

	RS.
Interest and sinking fund on Rs. 2,50,000 at 6 per cent.	15,000
Working charges	8,000
Depreciation	3,000
Total	26,000

The Council is of the opinion that, bearing in mind that the introduction of a costly water scheme without an efficient measure for drainage would be only a partial remedy for the evils from which the town now suffers and that the benefits conferred by the former will present themselves to the population in a much more tangible form than those to be derived from drainage, it is advisable to meet the cost of the project from an increase to its income specially intended for the purpose and draw as little as possible on its present surplus income.

The annual water-rate may be set at Rs. 8,000 for the area to be supplied at a low estimate. Until last year the Council received from the District Board a half share of the tolls collected around the town by the latter. This was reduced to one-third by G.O., No. 673-L., dated 15th April 1887, paragraph 4, Local and Municipal Department, without its being allowed to offer any remarks on the subject. The District Board have, in their resolution No. 78, dated 2nd June 1888, expressed their willingness to allow the former rate of division to be reverted to if a really satisfactory water-supply project is carried out, and the Council trusts that Government will see fit to approve of this generous offer. It is estimated that the introduction of the supply would effect a saving of Rs. 3,000 per annum in the cost of maintaining the present water system and of repairing the roads. These three items would make up Rs. 16,000 out of the total required. For the rest, the Council observes that in this district no means of raising an income seems to be so popular as a small fee for the admission of sellers to markets. The Council derives an income of Rs. 12,000 per annum from its markets, and they propose to increase the fees so as to raise an additional Rs. 4,000 therefrom. A grain market is much needed, and, considering the very large trade the town possess in this article, the Council believes that an income of Rs. 4,000 might easily be obtained by establishing one. There is a large mass of disused buildings close by the present market and in a very central situation which was formerly used as a district jail. These buildings are of no use to Government or to any one else and are rapidly falling into decay. Should Government see fit to hand them over to the Council in consideration of the heavy strain the project will place on their resources, they would be admirably adapted for a grain market. The above items would make up the sum of Rs. 24,000 without trenching on the existing resources of the Council. This would leave only Rs. 2,000 to be met from general income. Of course the income from markets is not absolutely certain, but the Council consider that they have under-estimated the probable revenue therefrom and even if they are disappointed, the call on general revenue this scheme makes, will be so small that it will be well able to meet any deficiency.

In conclusion, the Council beg to call attention to the very small sum to be realised from water-rate under the present Act—amounting, as it does, to only 2 annas per head per annum on the population supplied. The charge seems altogether out of proportion to the benefits to be derived, and they would suggest that if the Act could be amended in this respect, their position in seeking funds would be much stronger, although they think that it will be quite possible to meet the expenditure at the present rate.

TRICHINOPOLY,
21st July 1888.

(Signed) J. G. D. PARTRIDGE,
Chairman.

EXTRACT from the Proceedings of the Municipal Council for the town of Trichinopoly passed at the special meeting held on 13th July 1888.

Read the draft report prepared by W. A. Willock, Esq., the Acting Collector of Trichinopoly, regarding water-project.

The Council unanimously adopt the report on the water scheme prepared by the Acting Collector and resolve to submit it to Government for sanction.

TRICHINOPOLY,
20th July 1888.

(Signed) J. G. D. PARTRIDGE,
Chairman.

From W. S. BETTS, Esq., Agent, South Indian Railway, to the Consulting Engineer for Railways, Madras, dated Trichinopoly, 21st July 1888, No. 614.

In continuation of my letter No. 458, of the 31st of May last, I forward tracing No. 102 of 1888, and the following copy of a report which I have received from the Chief Engineer:—

“With reference to the remark of the Consulting Engineers, that it seemed to them better that the pump and engine-house should be placed on land and not on the wells in the middle of the river, I forward a tracing (No. 102—88) from which it will be seen—what was not shown

on the tracing sent with the project—that the wells are not really placed in the middle but at the side of the river. It is true they will be in the river, but they will not be far from the bank to which I proposed to give access by a gangway constructed of old rail piles with a foot-way on top. My object in proposing to place the engine-house on the wells in the river is that the machinery must be kept above flood level, and as this level is sometimes the same both in the river and outside its banks over the general surface of the country, it seemed to me a saving to place the structure on the wells in the channel instead of providing a second and separate set on which to build clear of the river.

“Since sending forward the scheme, I have learnt on good authority that the Kodumuri river which is shown on the tracing to join the Cauvery just above the wells originally proposed, drains an area on which there are many dirty and cholera-stricken villages and hamlets. I propose therefore to sink the wells in the Cauvery a little above the junction of the Kodumuri so as to be up stream and away from the continuation of this affluent.

“I estimate that the extra cost of doing this will not exceed Rs. 2,000.

“I shall be glad to receive early sanction to the scheme, as it will take some time before the piping and requisite machinery can be supplied from England and it is important that the works should be completed before next dry season.”

Will you please obtain the orders of Government hereon.

No. 234.

Submitted to Government in continuation of the Consulting Engineer's endorsement No. 202, dated 20th June 1888.

2. The revised site, as proposed by the Chief Engineer, South Indian Railway, is recommended for adoption.

MADRAS, (Signed) S. SMITH, Major, R.E.,
23rd July 1888. for Offg. Consulting Engineer for Railways.

No. 200-C.

Referred to the Local and Municipal Department, in continuation of No. 357-D., dated 22nd June 1888.

(Signed) W. H. COAKER, Major, R.E.,
24th July 1888. Under Secy. to Govt., P.W.D.,
Railway Branch.

Forwarded to the Municipal Council, Trichinopoly, in continuation of endorsement, dated 12th July 1888, No. 586.

(By order.)

(Signed) W. S. MEYER,
Asst. Secy. to Govt.

From J. G. D. PARTRIDGE, Esq., Chairman, Municipal Council, Trichinopoly, to the Chief Secretary to Government (through the Collector of Trichinopoly), dated Trichinopoly, 24th July 1888, No. 55.

In reply to your communication No. 586, dated 12th July 1888, forwarding, for my report, the papers about the water-supply at Trichinopoly railway junction station herewith returned, I have the honor to refer you to the report and the Municipal proceedings of the 13th instant, which accompanied letter No. 63—2, dated 20th July 1888, from the Acting Collector of this district to your address.

No. 430.

Forwarded.

(Signed) W. A. WILLOCK,
26th July 1888. Acting Collector.

ORDER—dated 13th August 1888, No. 899 M., Local and Municipal.

The Government in this department approve generally of the outlines of a water-supply scheme proposed by the Collector and the Municipal Council of Trichinopoly. Detailed plans and estimates should now be prepared which will be considered in due course in the Public Works Department.

2. As regards the proposed co-operation of the South Indian Railway, the Railway Department will be informed that if a satisfactory arrangement can be made between the railway and the municipality, the Government in this department will be prepared to sanction it.

3. The Council's financial estimate appears to be too sanguine in several respects, *e.g.*, as regards the annual charge required to pay off with interest in, say, 30 years, a loan of 2½ lakhs contracted in the open market; as regards the revenue to be derived from water-rate on the comparatively small portion of the town to be served by the present scheme, the increased receipts from tolls by a reversion to the arrangement with the District Board in force prior to G.O., 15th April 1887, No. 673 L., &c., These matters should be carefully reconsidered when the detailed estimates have been prepared.

4. If the scheme can be extended so as to benefit the troops, or at least the lines near the Tanjore road, the Government will be prepared to afford substantial aid from Provincial funds. But, until they have the detailed estimates before them, they can make no definite promise as to the nature and extent of such contribution.

5. In view of the fact that buildings and lands are already liable to pay a tax of 7½ per cent. on their annual rent-value towards the general purposes of the municipality, the Government are not prepared to amend the District Municipalities Act with the object of increasing the water-rate beyond 4 per cent., as suggested by the Municipal Council.

(True Extract.)

J. F. PRICE,
Ag. Chief Secretary.

To the Collector of Trichinopoly.
" Chairman, Municipal Council, Trichinopoly,
" Public Works Department. through the Collector.
" " " (Railway Branch), with papers returned.

Govt. of (1888) Madras.

LOCAL AND MUNICIPAL.

Issued

Recd.

Encl.

G.O., 13th August 1888, No. 899 M.

AUGUST.

Water-supply.

Approving generally the proposals of the Trichinopoly Municipal Council in regard to the — of that town, and directing the preparation of detailed plans and estimates for consideration in the Public Works Department.