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(MADRAS RECORD OFFICE)

GOVERNMENT OF MADRAS

L & M DEPARTMENT

G.O. No. 448 (M)
~~B.P. No.~~

~~Press~~
Mis.

Dated 24-3-1891 ~~196~~ .

Not to be folded or roughly handled

To,

H. G. Turner Esq

Collector of Vizagapatam District

Sir,

I beg to inform you that I have put the water gauge in the three places at Moodoosellim according to your personal instructions on the 27th Ultimo and found the following results therefrom -

A. The gauge across the stream on the natural flow of the water on a level of 132·28 ft above the mean Sea Level gives $231\frac{3}{4}$ gallons per minute.

B. The gauge across the small anicut channel opposite to the gauge A, which runs from the same stream on a level of 145·54 ft above the mean sea level gives $108\frac{1}{2}$ gallons per minute.

C. The gauge across the spring channel which runs from the foot of the hill near the roadway and a channel cut by me to find the flow on a level of 146·42 ft above the mean sea level gives $79\frac{1}{4}$ gallons per minute.

The water measured at the gateway on the top of the steps at Hanumanthadhara at Simmachellam gives 58 gallons per minute.

The total quantity of water that can be obtained in this hot season by gravitation is as follows:-

From Gauge A ———— = 231 3/4 gallons
—— do —— B ———— = 108 1/2 —— " ——
—— do —— C. ———— = 79 1/4 —— " ——
water from Simmachellam —— = 58 —— " ——
Total gallons per minute = 477 1/2

Total gallons per hour = 477½ × 60 = 28,650 gallons.

——do—— per day = 28,650 × 24 = 687,600 —"—

Population $\frac{687,600}{35,000}$ = 19·64 per head.

say about 19½ gallons per head.

To obtain the above quantity of water we must undertake the following works instead of building a tank at Moodoosellwah.

I. - An anicut with cut stone facing for a length of 100 ft with a height of 8 feet above the bed of the stream to be built with necessary connecting pipes between the anicut and the regulating cistern.

II. A well of 200 × 100 ft with a depth of 6 or 8 feet is to be dug at the springs near the roadway on the swampy ground with necessary pipe to connect the regulating cistern.

III. 3 inches pipe is to be connected from the gateway of Simmachellam temple at Akasa or Hanumanthadhara to the regulating cistern at Moodoosellwah for a length of 4¼ miles with necessary masonry works.

The cost for these works will be about as follows:-

For anicut ————	Rs 8,500.
For well ————	" 2,500.
3 inch pipe from Simmachellam	14,000
other pipes &c ————	3,000
Total Rs	28,000
Deduct the estimated amount for a tank	-20,000

Net increased cost of Rs 8,000 for these head works of water supply, but there is one advantage

in

in doing this way, that is, we can carry the water and supply to the population of Waltair without any pump with fire engine as it has already been proposed for, and the amount provided for the same, namely Rs 5,500/can be met from this, and there will be little or no increase found when the proper estimates are prepared for all works.

In adopting this plan for the head works, it is necessary to regulate levels above the mean sea level as follows:-

The bed of the Jail tank is ————	= 94·00
Full tank level of —do— to be (to contain 12 cft water) ————	= 106·00
The bed of Regulating cistern at Moodoosellwah to have an inclination of $\frac{1}{1000}$ for a length of nearly 28,000 feet from the jail tank to be ————	= 134·00
The crest of anicut across the stream to be 6 feet above the regulating cistern in order to have the effective head for the main pipe ————	= 140·00
The surface water level of the well at the Swampy ground near the Roadway ————	= 146·00

can be made, and where the springs can flow and fill up the tank itself without pumping of any sort.

The springs at Simmachellam temple will be more than 300 ft above the mean sea level and I have not taken the levels of the same.

I consider this scheme with my poor knowledge, better than those which have already been made, as the scheme has but few Engineering difficulties & avoids all the pumping difficulties of any sort either in the head of works or in the Town and there is no possibility of any damages occurring to the works during the heavy rains & cyclones which prevail along the sea coast very often.

× × × × ×

× × × × ×

× × × × ×

I have &c

(Signed) Vencata Rungam Dell

Local Fund Supervisor

Vizagapatam
5th May 1885

'True copy'

Sanitary Engineer to Govt.

2/379 W&A'

No. C/29

From,

G. T. Walch Esq.,

Superintending Engineer, 1st circle.

To,

H. G. Turner Esq.

Collector of Vizagapatam District.

Camp Vizianagaram 5th Feby 1888.

Sir,

At your request, I have the honor to forward the enclosed remarks with reference to the proposals for supplying the Town of Vizagapatam with water; I do not include the Civil station & village of Waltair in my remarks because their provision with water other than from their present means of supply is a comparatively unimportant matter and it seems evident to me the cost would be greater than the advantages gained would warrant.

2. I must presume that the opinions and remarks which I offer are formed simply on a cursory inspection of the sites & ground dealt with & on the somewhat scanty information on the subject generally which has been placed before me, I have no means of checking correctness of that information.

3. It has been quite impossible in the

absence of information on the subject for me to deal with the probable absolute cost of the various schemes; but I may say that I consider that neither of them would be very expensive as compared with similar water supply works of other towns.

4 - The following papers some received from you & some from Mr Ussher are herewith returned.

(i) - Memo on Modasarlova reservoir by Local Fund Supervisor dated 10.1.88 on white paper
(ii) - do - do - do - do - no date (on blue paper)
(iii) - Letter from Mr Gauge to you dated 9.12.87 & enclosure.
(iv) - do - do - do - dated 10.12.87
(v) - Memo by Col: Fraser R.E. dated 10.11.87.

I have &c &c.
(Signed) G. T. Walch
Superintending Engineer
1st circle.

'True copy'

Sanitary Engineer to Govt.

3/319W of 91

Remarks on the scheme for supply of the Town of Vizagapatam with water.

To accompany letter to the Collector of Vizagapatam, No $\frac{C}{297}$ dated 5th February 1888.

Population to be taken as 35,000.

allowance of water per head = 20 gallons per diem

∴ total quantity of water
required per diem = 700,000 gallons
or per annum = 255,500,000 "
or per minute = 486.

Scheme No I - "Col: Fraser's."

(1) - Supply to be drawn from the Hanumanthavaka stream at the gorge, constructing a small weir and also sinking a large well at the place to pump from, and then raising the water by pumps to a reservoir on the side of the hill at such a height as to command by gravitation all the town of Vizagapatam below M.S.L. + 60; below which level it is believed that all the true town lies.

(2) - The scheme is perfectly feasible if a sufficiency of water is obtainable at all times of the year from the natural flow of the stream; I do not believe that any appreciable addition would be obtained by the proposed well - That flow can easily be gauged by means of a

small weir during the months of the year when there is least in the stream and should be found that the daily discharge ever falls below the required quantity then the scheme may be at once abandoned.

(3). That quantity is given above as 700,000 gallons a day but it would be no very serious matter if for a short time in each year only half that quantity or at the rate of 10 gallons per head were given to the town.

(4). The level of the bed of the stream at the gorge is stated to be +36 and allowing 26 feet roughly for the slope× which would have to be given to a 12" diameter pipe, and for loss* of head at a filter bed, the height to which the water would have to be lifted would be 50 feet and for this steam pumps would be necessary; but as neither the height to be lifted to nor the quantity to be lifted is very great the pumps & engines would not be costly. A double set of each would be necessary so that there might be no fear of stoppage for more than a day or whatever might be the time for which the service reservoir would hold a supply in cases of break down.

× 16 feet
* 10 feet

(5) - The advantages of the scheme are:-

(a). Its small cost for impounding works.

(b). Its much shorter length of piping than in any other scheme; only $2\frac{7}{8}$ miles as against $5\frac{1}{4}$ in scheme No 3 & $8\frac{1}{4}$ in scheme No 2; & the cost of iron piping 12" diameter laid is stated to be about Rs 17,000/a mile.

(c). The quickness with which it might be set going.

(d) The freedom from anxiety & risk that there would

would be in connection with the safety of the impounding embankments of other schemes.

(e). The absence of the trouble which in the other schemes will some day or other be inevitable from silting up the storage reservoir.

(6) - The disadvantages of the scheme are:-

(a). The cost of the pumps, engines, engine house and attendants quarters, which however would not bring the cost of the head works to nearly as much as that of the reservoir & its appurtenances of scheme No 2.

(b) The cost of working the pumps, establishment, fuel &c - It is believed that Mr Gauge has made an estimate of what this would be but I have not the information before me - whatever it may be, capitalized at the rate at which the Municipality could borrow, would form an important item in the consideration of the cost of the scheme.

(c) The difficulty of getting the pumping machinery repaired when it went wrong, there being positively no workshops where such repairs could be carried out nearer than Dowlashwaram.

(7) - This last is undoubtedly by far the greatest of the disadvantages and is so serious that in my mind it turns the scale against this scheme. If however before any of the proposals should be carried out there appeared a tolerable certainty of Railway workshops coming into existence at Vizagapatam, then I should prefer this scheme to the others, always, of course, supposing the observations as to the flow

of water in the stream shew it to be sufficient

Scheme No 2.

(1). Reservoir to be formed by restoring old tank at Sinnachellam and supply taken therefrom by pipes to a "service" reservoir or tank near the jail from which the distribution to the town would be led off -

(2). There would be absolutely no construct-ional difficulties about this and the cost of restoration of the old bund and necessary appurtenances would probably not be more than one-quarter that of the reservoir in Scheme No 3 -

(3) As regards the levels, the bed of the tank is said to be M.S.L. +129 and supposing the off take to be at 10 feet above this and the slope required for the piping (8½ ms) to the "service" reservoir to be about 46 feet, & the loss of head at a filter bed 10 feet, the water could be delivered at the "service" reservoir at about +83; this would be some 23 feet above what is contemplated under scheme No 1.

(4) The catchment basin is said to be upwards of 4 square miles which is more than sufficient× to give the required supply.

× see consideration of catchment basin scheme No 3 -

(5) - What would be the storage capacity of the reservoir there is nothing to show - Mr Gange indeed in his letter* of 9th December 1887 says it would contain 2 or 3 years supply but he is, I am confident, much mistaken unless indeed he contemplated not merely restoring the old bank but raising it & impounding water to a much higher level than was ever the case in the old tank - Supposing however it would contain× a 5 months supply, which I consider is the least that such a reservoir should contain, then the advantages and disadvantages of this scheme may be thus summarised -

* returned herewith

(6) Advantages.

(a). Cheapness of construction of the impounding works -

(b) The fact that into its basin flows the water from the beautiful Sinnachellam springs which give a very appreciable supply of the present water during a considerable portion of the year and never entirely cease to flow; though, from a report by L. Virtue made in July 1858, it appears that in the hot weather their discharge falls to only 2 c.ft per minute -

(7) Disadvantages.

(a) The distance of the reservoir from the point common to all the schemes (viz the "service" reservoir near the jail); this is stated to be 8½ ms against the 2⅞ ms of Scheme No 1 & 5¼ miles of Scheme No 3 and the extra cost of iron piping for this greater distance would amount to more than the difference between the cost of the impounding works in this scheme & No 3 -

(b) - The greater cost of compensation for land for the reservoir - what this would be - I have nothing to show me but as the greatest part of the proposed water spread of the reservoir is under wet cultivation, it would certainly be considerably more than the compensation which would have to be paid for the reservoir of scheme No 3; whilst for scheme No 1 there would of course not be any such expenditure necessary.-

(c).- The impossibility of keeping the gathering ground of the reservoir free from extensive pollution during the great annual Sirima-chellam feast when many thousands of devotees and their followers assemble there.

(8). This last disadvantage is so serious that in my mind it turns the scale against this scheme, though from the ease with which the reservoir might be formed & the beauty of its situation it is, at first sight the most attractive of all the proposals.

Scheme No 3.

Reservoir to be formed by throwing an embankment across the valley of the Hanumantharaka stream at a place called "Moodoosellwah".-

(2) According to the memorandum on the subject drawn up by the Local Fund Supervisor Vencata Rungam Pillay the catchment basin would be 4 square miles, but some one has entered in the margin that it would be only 3 3/8 sq miles - The rainfall in the valley is said to be 40" per annum & taking only 1/3 of this or say 13" to run off the supply from 3 3/8 sq miles would be 636,649,728 gallons per annum or considerably more than double the quantity required -

sq ft in one sq mile approximate
27,878,400 × 3.4
= 94,786,560 × $1\frac{1}{12}$ cft
= 102,685,440 × 6.2
= 636,649,728 gallons.

(3) The

(3). The capacity of the reservoir given by the Supervisor (there I have no means of checking in any way the accuracy of his calculations) with water at level M.S.L.+163 would be 23,372,118 cft = 144,907,131 gallons and allowing 1/3rd (a very large proportion) for soakage and evaporation during the whole time that it might be without supply, he takes the storage available for distribution supposing the reservoir to start full and not to receive during the time any fresh supply, as 15,581,412 cft = 96,604,754 gallons or about 138 days supply.

With the water level of the reservoir raised to M.S.L. +169, he gives its capacity as 31,643,073 cft & the final figures treated in the same way become 130,793,439 gallons or about 187 days supply - As the take off from the Reservoir will of course not be from the lowest part of its bed, and probably from not below ten feet above that, and as occasionally the reservoir may be 5 months without receiving any supply it would be advisable if this scheme be adopted to take the higher of the two levels above noted as that to which water should be impounded & then, with care in drawing off, the capacity of the reservoir would be ample.

(4). As this higher level for the reservoir surface would, it appears, not require a bank with more than 27 feet of water against it in its deepest part there would be no serious constructional difficulties.-

(5) As regards the levels, the lowest part of the bed of the proposed reservoir is stated to be M. S. L. + 142 and the off-take would be at, say, about + 152. The distance from the "service" reservoir near the jail is said to be 5¼ mile. the slope required for the piping in this distance would be about 29 feet and allowing 10 feet for loss of head in filtering the water could be delivered at the "service" reservoir at about M. S. L. + 113 which would command some houses that neither of the other schemes would serve and would deliver through the town distribution pipes with a pressure that might be made useful in cases of fire.

(6). Advantages

(a). Delivery at the "service" reservoir at a considerably higher level than under either of the other schemes.

(b). The saving in cost for compensation for land, as compared with scheme 2.

(c) The freedom of its gathering ground from liability to pollution.

(d) The less distance of the storage reservoir than in scheme 2 from the "service" reservoir and consequent saving in piping.

(7) Disadvantages.

(a) The much greater initial cost of construction of the impounding works than under either schemes No 1 or No 2; this disadvantage is as compared with scheme No 2 more than counterbalanced by advantage (d).

(8) In this scheme the comparative advantages more than counterbalance the disadvantages, & rejecting the other schemes

for

for the reasons given, I consider this one (No 3) the best. There would be no serious Engineering difficulties in carrying it out & as to the cost it would be moderate as compared with that of most town water supply works.

(Signed) G. T. Walch
Superintending Engr
1st circle

'True copy'

Sanitary Engineer to Govt.

Form A.

No. T/60

Government of Madras. 319/le

Office of Sanitary Engineer,

Camp. Cocanada
~~Fort St. George~~, 30 January 1891.

Despd. - 6th February 1891

From

J. A. JONES, Esq. mem. inst. c.e., f.r.s.e.,
Sanitary Engineer to Government,

To

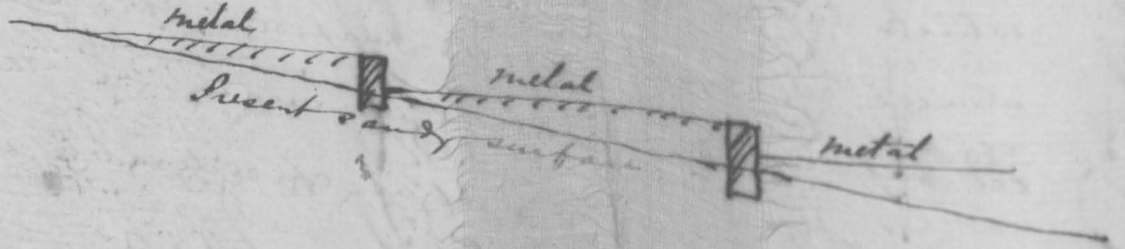
The Chief Secretary to Government,
Local and Municipal Department.

Sir,

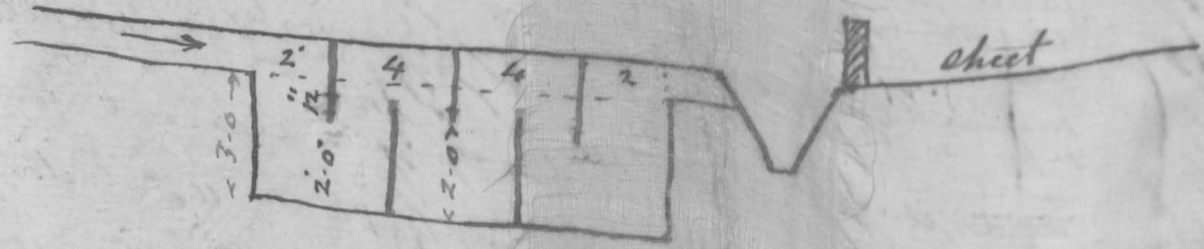
I have the honor to forward for the information of Government the following remarks as to the Drainage & water supply of the Town of Vizagapatam.

2. Drainage - The majority of the streets possess drains which, though not of a very good description, act in a fairly effective manner in carrying away the sewage from the immediate vicinity of the houses - The drains are open V shaped drains & seem in fair condition though at some places the joints in the masonry are defective and require to be repointed - The chief cause of complaint with reference to these drains is that towards the higher parts or the southernmost portion of the town they often get choked with sand - This seems to be chiefly due to the sand which is washed down two streets which run up towards the ridge. These streets are unmetalled & have a considerable slope and I have suggested to the Chairman that,

if the streets were well metalled and were formed into steps (they are apparently not used for cart traffic), the sand would be to a considerable extent arrested from the main street drain which runs across their lower ends - The steps may be formed by boulders about 7" to 10" high thus:—



3. At the junction of the drains of these streets large catch pits should be formed of the following section longitudinally and about 18" to 2 feet broad -



Catch

These cesspits should be cleared of any sand lodging in them from time to time.

4. Looking to the circumstance that the first need of Vizagapatam is a proper water supply, I am of opinion that, besides making the existing drains water tight & otherwise repairing them where necessary, further improvements except in the following respects may lie over for the present.

A

5. The improvements which I think it is desirable should be carried out at an early date are improvements at the outfalls of the drainage -

6. Most of the drains discharge towards the swamp

swamp on the west - The outlet drains are for the most part masonry drains; of these there are five from the lower portion of the town and they are continued by ditches until they meet a cross ditch running north and south which is supposed to discharge the sewage into a tank known as the Fish Pond near the magazine, to which tank sea water can be admitted by sluices arranged for the purpose - This tank is let out by the Council annually for the purpose of fishing & some considerable income is derived from its being rented.

7- I said that the sewage is supposed to discharge into this tank; a very small portion from the ditch nearest it does do so but on my visit the remainder of the ditch was blocked up so that the sewage remains in this ditch and it is at present anything but pleasant to be in its vicinity -

8. The reason given for the state of the ditch was that, owing to the high wages paid by the East Coast Railway for Cooly labor, the Municipality were unable to obtain labor. I doubt whether the clearing of the ditch would be an unmixed blessing because to send all the sewage to the fish pond & then to let out that pond so that the tenant may secure fish and the Municipality an income is to my mind not a measure that can be in any way approved and either the sewage ought not to be discharged into the pond which is really a small tank or the capture of fish ought to be stopped for I cannot think

that fish caught there can be wholesome.

9. Meantime the sewage stagnates in the ditch which runs parallel to the town on the west of it for some half mile and the question is what ought to be done with it. It cannot find an exit except into the swamp & only then at low water. It must therefore be raised but at present there is no land which is high enough above sea level on to which it could be discharged.

10. The road which bounds the town on the west & which is between the town and the larger part of the swamp (the sewage stagnates between this road & the town) has been made over to the Railway Company and they are about to use it as a Railway embankment. The Council, I understand, have not settled the amount of compensation; this is, I understand, to be arrived at by the Executive Engineer of the Railway. This, I must remark, is not what may be called a business like transaction of the Council and their interests may suffer and I would recommend that any arrangement of this kind has the previous sanction of Government.

11. Why I more particularly refer to the matter is that I suggested to Mr Walker, the Engineer-in-Chief of the East Coast Railway that instead of paying compensation to the Council, it would perhaps be more advantageous to the Council to have a portion of the swamp raised by the Company & onto the portion thus raised the drainage might be lifted by picottahs & a sewage farm thus initiated; the raising should preferably be to the west of the Swamp Road which will then be the Railway Embankment.

12. Mr Walker's reply was as follows:— "As regards raising the swamp west of the town I fear I cannot assist you but when the Railway is constructed with the assistance of some wagons & a siding or two which the Municipality might have the matter could be arranged."

13. This would seem the time to take action in this matter and I would ask Government to direct that the Collector be requested to arrange the amount of compensation & report how the sum arranged for may be best expended in raising a portion of the swamp sufficient for distributing that portion of the town sewage flowing from the five drains referred to.

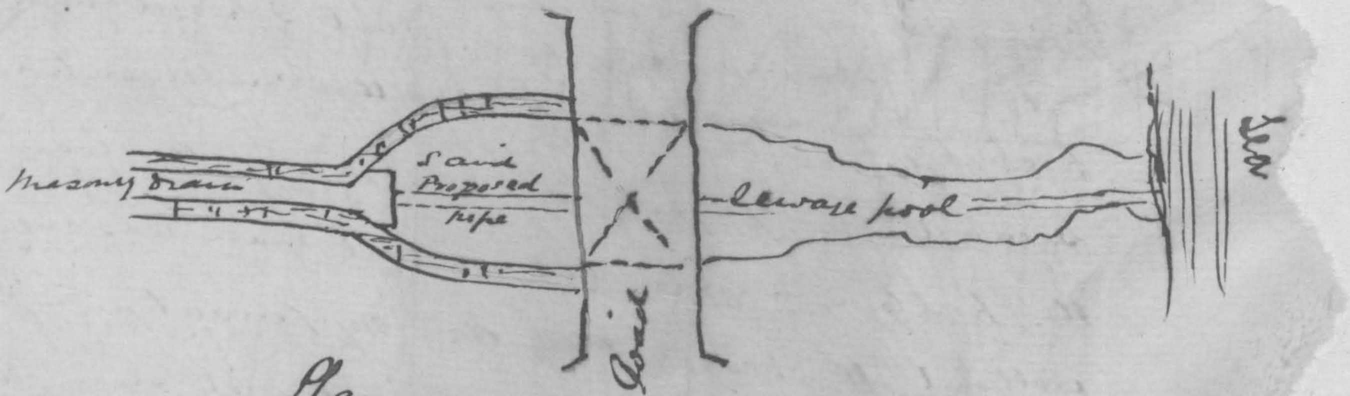
14. The Council from what I heard were probably intending to use the compensation secured for paying off a portion of the loan for the pontoon bridge but as that loan was incurred without the prospect of this compensation becoming available there would not seem due reason for diverting it to that purpose especially when urgent improvement in the manner proposed is urgently called for.

15. When the land has been raised the ditch east & west ought to be improved & it can be lined with masonry, I believe 12" tiles would probably carry all the sewage; a drain ought to be carried west to the raised land from the centre of the five drains referred to & to this drain the ditch ought to be graded from the south & north ends respectively.

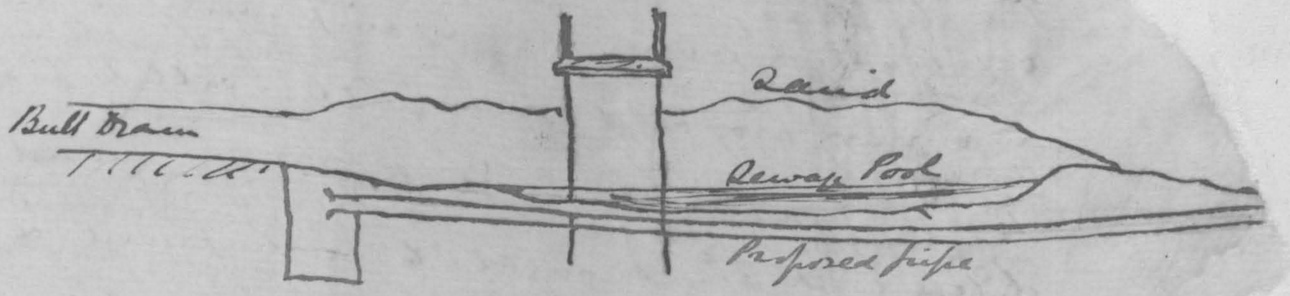
16. The fish pond could then be retained for its present use.

17. Further south than the five drains referred to & to the south of the magazine, two other drains enter the swamp. The contents of these drains ought also to be raised & placed on land immediately west of the town which site I pointed out to the Chairman. It is possibly rather close to the town but unless arrangement can be made to raise the swamp here also I do not see that any other arrangement is possible.

18. Of the drains which fall directly into the sea, the outfall of one drain, that furthest north, requires improvement & this can be effected by continuing the masonry drain by a 6" pipe to the sea.



Plan



Section

At present the sewage is kept back by the sand in a pool.

19. As regards the more northerly portion of the town, where the ridge between it & the sea is comparatively high and where the road drains are it may be said generally full of sand, I do not see that very much good can be effected so long as bare sandy areas exist in close proximity to the road drains. A high parapet wall east of the drain might be suggested but in time the sand would probably bank up against it and eventually come over it. What I think ought to be done is to plant Casuarina trees and encourage the growth of the goats' foot creeper. I believe that by giving this matter special attention (& the Forest officers might take action so far as Government lands are concerned) a great improvement might be effected.

20. It has been suggested in G. O. dated 16 October 1890, No 1538 M, para 8, that by burying the night soil of the town on these sandy ridges above the town behind the Civil Hospital, much of the area might be made more fertile, but I do not think that for many generations anything but very small tracts would be improved in this way & I doubt very much whether it will be judicious to place night soil in the sandy ridges above the town seeing that the tendency of rainfall passing through the sand on the ridge will be to pass towards the town.

21. Water supply. The question of improving the water supply of the town is one which has had a good deal of consideration & investigation but it yet demands a good deal more.

22. Three schemes have been before the Council

for consideration; these are as follows:-

(i)- Col Fraser's scheme - Under this scheme water was to be drawn from the Hanumanthavaka stream at a place called "The Gorge", a place on the Bimlipatam Road $2\frac{7}{8}$ miles from Jail Hill Vizagapatam.

(ii). The Simmachellam Scheme which includes the restoration of the reservoir at that place and providing a line of pipes to carry the water to Jail Hill some $8\frac{1}{2}$ miles distant.

(iii). The Moodoosellovah scheme which consists in throwing an embankment (to retain 27 feet of water at the deepest point) across the valley of the Hanumanthavaka stream at Moodoosellovah which is $5\frac{1}{4}$ miles from Jail Hill or $2\frac{1}{4}$ miles further up the valley than "The Gorge" mentioned in the first scheme.

23- I attach a copy of a report on the three schemes by Mr Walch, Chief Engineer for Irrigation. I have inspected the proposed sites for the head works for No 1 & 3 schemes; I did not visit Simmachellam because it is too far distant and it has disadvantages pointed out by Mr Walch which render it unnecessary to take that scheme into further consideration.

24- It will be noticed that Mr Walch is in favor of No 3 scheme but would have been in favor of No 1 scheme if (1) the amount of water flowing through the Gorge were at all times sufficient, (2) the difficulty of getting the pumping machinery repaired could be avoided.

As

25- As Railway shops will be soon in existence at Vizagapatam, the latter disadvantage of No 1 scheme which was considered by Mr Walch as its greatest disadvantage will shortly disappear.

26- The amount of water is however a more serious question; I cannot find out that the stream has been guaged at "The Gorge" throughout the year or during the driest season but I find that it has been so at Moodoosellovah further up with results shewing that including the flow from certain springs in the valley 420 gallons per minute or 604,800 gallons per day are obtainable. This gives only $\frac{604,800}{35,000}$ gallons or a little over 17 gallons per head.

27- While probably very little water is received in the stream between Moodoosellovah and the Gorge, a large quantity is used for irrigation so that a much less amount than 17 gallons would possibly be obtained.

28- Even taking scheme No 3 with a large reservoir at Moodoosellovah the supply obtainable from the rainfall is only expected to be double of what is annually required by the town - It is suggested that the capacity of the reservoir should be such as will contain after allowing for losses 130,793,439 gallons or about 187 days supply; all this will not however be available as the main pipe would not be taken from the bottom of the tank but from some 10 feet above it; probably therefore no more than 100,000,000 gallons will be available or 142 days supply which will barely be enough for the demands during the 5 months when there is no rainfall -

29- When the Council in March 1888 approached Government for permission to raise a loan, Government were of opinion (G.O, dated 21st May 1888, No 524 M (Mis), Local and Municipal,) that detail plans & estimates should be prepared; The Council in a revised budget provided a sum of Rs 1,000 for this purpose but the amount was not used & the grant lapsed -

30- There can be no doubt that further investigations are very desirable before any definite conclusions as to the available supply, the levels &c, the cost &c can be arrived at - The cost of Scheme No 3 has been estimated at from Rs 130,000 to Rs 1,75,000 but I doubt if it could now be executed for even the larger sum -

31- For the distribution reservoir the jail tank was selected as suitable - It is at present an open tank with a rocky bottom - It is used as a drinking tank at present but though watched it is of course open to pollution and is not suitable for a distribution reservoir. The rocky formation at the bottom is much fissured & it is too large for the purpose intended. A built tank will be necessary which must be placed further away from the public roads; there are possible sites available higher up the hill -

32- Such briefly are the three chief projects which have been considered up to date.

33- Another project[x] is by the Local Fund Supervisor

[x] Copy of report attached

16

Supervisor who proposed to put a low dam across the Hanumanthavaka at Moodoosellivah & to increase the available supply of 17 gallons per head by bringing down by a 3" pipe water from Simmachellam a distance of 4¼ miles - Even this small pipe adds Rs 14,000 to his estimates for an additional supply of 58 gallons per minute and the total supply is thus raised to 19.64 gallons per head per minute which is less than what has been estimated as what should be supplied, viz, 20 gallons per head. The quantity obtainable under this scheme is too small to secure the town against a water famine in very dry years and a larger amount should be available under any scheme selected -

34- It is I think desirable that both schemes No 1 & 3 should receive detailed investigation - It may be possible to raise a bund at the Gorge itself which will allow of the formation of a large tank there, (probably the road through the Gorge may have to be raised) from which tank it may be found cheaper to pump the water into a high level reservoir for the town, than to construct the works required by Scheme No 3 and in addition to such investigation I think attention may be directed to the consideration whether the town cannot be supplied from wells.

35- It will be observed from the plan accompanying that the Hanumanthavaka Valley is north of the Hill called Kailasa - To the south of this hill & in the valley between it & that portion of Vizagapatam called Allipore, there is a very fertile tract of country irrigated by two streams coming from the Kailasa Hill & by tanks and wells which, I am informed, never run dry - I inspected this locality and it appears to me that, while artesian waters are not likely to be tapped the rock formation being gnessic with a great dip towards the coast & much fissured, there is to be found in the overlying strata large quantities of water - I am confirmed in this opinion because in Allipore itself there are many wells which, it is said, afford a good supply of water throughout the year and these wells never run dry (of course they never have a very heavy draught on them). Their waters, as far as a superficial examination went, appeared to be of fair quality and it is desirable therefore that some careful experiments should be made by pumping from selected wells in Allipore itself & in the district adjacent to it (viz Gollapollium) & a mile to the north west of Allipore - The weekly variation of levels of the water in say ten or twenty tanks or wells in this district should also be noted for a whole hot weather - By this means it is probable that it can be determined whether water in sufficient quantity for the supply to the town is available and the district referred to being but a short distance away from the town probably a cheaper supply would be secured than under any other scheme; the investigation will however require to be done

by

by qualified person & perhaps the Collector might arrange for the Local Fund Engineer to undertake it. It is said that the result to persons drinking this water is fever but I can find nothing in the water to cause this & I do not see that water derived from one side of the Kailasa Hill can be very different from that derived from the other.

36- The investigation of the two schemes Nos 1 & 3 referred to should be entrusted to a special officer of some experience; such a man could probably be obtained by advertisement & he could not undertake the work under six months, as levels of the town must also be secured; nor is it likely that the services of a proper man can be obtained at less than Rs 150 to 175 a month - If engaged in this hot weather he could make the investigation as regards the wells in the Allipore & Gollapollium district also - After his out door investigations were completed, it would take some six months to prepare the plans for the scheme.

37- It is now a matter of importance, seeing that the Railway is under construction & that the trade & population will be thereby increased, that some early steps should be taken to provide the town with a supply of water & it can be gathered from the reports of the District Surgeon that the prevailing diseases are due in a great measure to the state of the water supply.

38- I approached Mr Walker on the subject suggesting that it might be possible for the town & the Railway to join in providing the supply - He replied "we shall certainly want water for our engines & shops & will arrange for all we shall require but on no such scale as would be necessary for a large town like Vizagapatam. - It is necessary that we should have complete control over our water supply & I fear that would be difficult if we entered into partnership with the Municipality, in fact I have known it lead into grave difficulties before."

39- I did not proceed to urge the matter further as it is a proposal on which it is desirable to have the views of Government. - I may however point out the case of Trichinopoly where the S.I.R. Company is joining with the Municipality in constructing the water works & have also to observe that, in the towns of Madras, Bombay & Calcutta, the Companies generally are dependent on the town supplies. - I see ~~at least~~ no reason why the East Coast Railway at Vizagapatam should not at least use the town water instead of providing a separate supply for themselves & by such means a portion of the amount required to pay working expenses, for loans &c would be found by the Railway Company. - The point might be further discussed by the Collector & the Engineer-in-Chief if Government approve of my suggestion.

40- Whether the Railway authorities assist in the scheme or not the very fact of the

Railway

Railway coming into Vizagapatam, it is believed, will increase trade & add to the population of the town & there would therefore seem now more necessity than ever to provide Vizagapatam with a water supply.

41- I request therefore that Government will be pleased to pass such orders as will cause speedily a further investigation of the various schemes & tend to ensure eventually the construction of the necessary works.

I have the honor to be,

Sir,

Your most obedient servt.

Sanitary Engineer to Govt.

J 9V

319 M.

527/M 21-5-86
771 M 16-5-90
374 M 9-6-89

1891.

From

The Sanitary Engineer
to Government.

To

The Chief Secretary
to Government
Local & Munl. Dept.

No. I/60

Dated 30th January
Despd. 6th February 1891
Recd.

CHIEF SECRETARIAT
7 FEB 91
MADRAS

Encs. 4 (Four)

Subject.

Drainage and Water Supply

Vizagapatam —

Forwards certain remarks

as to —

(With order)

Misc. order 24-3-91 No. 448 Mun.

Communicated to the Municipal Council, Vizagapatam, for early report as to the action which it proposes to take in the matter of providing the town with a good water supply.

2. The Council's special attention is drawn to the remarks of the Sanitary Engineer, contained in paras 5 — 20 of his letter which should also be reported upon.

10-3-91

12 March

Where is the plan referred to by the paras? I cannot understand the thing without it.

14 Mar

Note for Hbe

The plan referred to is now put up. It was separated from the file in the ~~office~~ table of the C.S. It came back to the office after the currency had been despatched to Hbe.

To the Chairman, Munl. Council, Vizagapatam, thro' the Collr, with a plan

" Sanitary Engineer

despd. 25/3

25/2

18.6.07
27-4-22

11-11-25 B III

Miscellaneous.

Local and Municipal Dept.
G.O., dated 24-3-91
No. 448 M

When given for copying

[Despatch Abstract.]

Drainage & Water Supply

Comg. to the Munl: Council Vizagm letter fr the Sanitary Engr. forwardg certain remarks as to the — of the town & req the Council to report on the points referre to

Not to be folded or roughly handled