Date taken out.	For what purpose.			Initials of clerk taking the paper or of attender.	Date returned.	Initials of attender.
	Department.	C. No.	Year.			

[L. & M. 5,000-3-8-96.]

INDEXED.

Local & Munl. (189) Department.

MISCELLANEOUS.

G.O., No. 1982 M

DATED 18-11-96.

[Despatch Abstract.]

Red Hills Tank

Comg. to the Municl. Commrs. of Madras for consideration and report, the Chief Engineer's remarks on the expenditure on pumping at the ——.

BACK PAPERS.

G.O.	No.	Department.	Date.

FURTHER PAPERS.

G.O.	No.	Department.	Date.

No 3915-C

P. W. Department
6th November 1896

Letter from the President, Madras Municipal Commission, No 60, of 15th April 1896.
——— do ——— do ——— No 952 of 3rd September 1896.
Endorsement thereon in the Local and Municipal Department, No 1105 of 24th September 1896.

Note by the Chief Engineer:—

1. It is impossible to give any decided opinion regarding the cost of pumping at the Red Hills tanks without more detailed information than is given by the Assistant Mechanical Engineer in his letter dated 10th April 1896, and all I can say is that the cost seems very excessive, though there may be unexplained circumstances that justify the expenditure.

2. From statement A it appears that the cost of moving and erecting machinery, temporary sheds for workmen to live in, repairing machinery &c, amounted in the years 1891-95 to Rs 25,446 or an average of Rs 5,089 per annum, and this seems extraordinarily high

BACK PAPERS.

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

FURTHER PAPERS.

G.O.	No.	Department.	Date.	G.O.	No.	Department.	Date.
Ewo 3390	1/96						
Ewo 1828	2/97						

Local & Munl. (1896) Department.

CURRENT No. 30361

CNos. 1207, 2502 & 3036 M.

From The P. W. dept.

Wise.

Order. No 1984 dunn dy 18-11-96

The chief Engineer's remarks will be communicated to the Municipal Commissioners of Madras for consideration and report.

V.R. 17/11/96

No. 3915 C

Dated 6. 11. 96

Received 16-11-96

Registered 16-11-96

Enclosures C. Nos 1207 & 2502 M with

Spare copies

SUBJECT.

Returning with remarks Report on the Expenditure on pumping at the Red Hills Tank. Returning with remarks —.

To

The President, M. C. Madras.

P/ 1st 2nd, 24-3 1920.

Desp. 20/11/96

17/11

16/11 5th/11

BACK PAPERS.

G.O.	No.	Department.	Date.

FURTHER PAPERS.

G.O.	No.	Department.	Date.

No 3915-C

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11

BACK PAPERS.

G.O.	No.	Department.	Date.

FURTHER PAPERS.

G.O.	No.	Department.	Date.

No 3915-C

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11

high for moving 4 engines and pumps from (I presume) Madras, fitting them up and providing cover for about 100 persons; if the sheds were made of durable materials the cost would not be so high, but in that case the materials used one year would do for the next.

3. The strength of the establishment employed is no where stated but I should say that no more than the following could be usefully employed.

3	Engine drivers	50	150
12	firemen	10	120
12	pumpmen	8	96
60	Coolies	6	360
1	Superintendent	150	150
1	Storekeeper	30	30
1	time Clerk	20	20
2	store Coolies	8	16
			942

This is liberal and allows for 3 reliefs.

92

To erect temporary sheds for a few months should not cost more than Rs 15 per head: therefore for 92 men or say 100 the cost would only be Rs 1,500. It therefore appears that Rs 5089 − 1,500 or Rs 3,589 must have been the average yearly expenditure on moving and erecting machinery, repairing it and additions and this seems a considerable amount as the pumping operations never lasted more than 4½ months in any one year.

× according to statement A but not according to details of expenditure.

4. As regards the cost of pumping:

From the data available it is usually assumed that in this country it costs As 10 to pump 1 Million gallons 1' high or .84 pies per 1000 gallons lifted 7' high which is the average lift at the Red Hills tank; the average cost of pumping at the Red Hills tank omitting 1887 was about 4.4 pies per 1000 gallons or over 5 times as much: However, the cost of 10 as per 1 million gallons raised 1' refers to stationary engines of the most improved types and it will be fairer to calculate the proper cost as follows.

Taking the year 1891 the total quantity pumped in 4½ months or 135 days was 79,87,50,000 gallons or 59,16,666 say 6 million gallons in 24 hours and the H.P. required to raise this quantity 7' is only 8.82 adding .80 per cent = 15.87 say 16 H.P. Making a

a liberal allowance for a very inferior portable engine not more than 30 lbs wood should be used by H P per hour, therefore the quantity of fuel used by the 16 H.P. in the 24 hours would be 11,520 lbs and the total quantity used in the 4½ months would be

$$\frac{11520 \text{ lbs} \times 135}{2240} = 694 \text{ tons}$$

which at Rs 6½ per ton = Rs 4,510. The establishment should not cost more than Rs 1000 a month or Rs 4,500 for the 4½ months, cost of oil, cotton, waste Rs 200 Contingencies Rs 250, total cost Rs 9,460 against Rs 18301 given in statement A. To show that my allowance of wood is very liberal I may mention that a direct-acting centrefugal pump only consumes about 2 lbs of good coal per indicated H. P per hour or about 6 lbs wood.

5. There appears to be some discrepancy between statement marked A and the detailed statement of expenditure: in the former it is stated that in the year 1891 pumping operations lasted 4½ months but from the latter I notice that the engine driver pumping staff, &c were paid for the month of May and every month up to December or a total period of 7½ months; this seems to require explanation. I also notice that during those 7½ months the quantity of fuel used was

180 tons coal equal to 450 tons wood
1125 tons wood.

or total 1575 tons wood, while the actual quantity that should have been used, if the quantity given as having been pumped up is correct, is only 694 tons. I also notice that the cost of establishment during the 7½ months was Rs 6126-4-10 or about Rs 817 per month and there are in addition the following items -

6126-4-10

1.	Supplying coolies articles &c to Red Hills pumping by Workshops during July 1891	1147-2-3
2.	Pumping water at Red Hills, repairing engine &c by Workshops - Oct 1891	184-9-8
3.	Pumping water at Red Hills by Workshops in September 1891	200-1-2
		1531-13-1

What these items mean I do not know, apparently they

they are cost of work done by Workshops and I suppose mean repairs: but the expenditure on this account has been entered in a separate column in statement A.

6. It appears that pumping has been required for 5 years out of 9 and that the cost of moving machinery, erecting sheds, and supply of new machinery amounted in that time to Rs 73583 and the cost of pumping to Rs 77,761. As pumping is likely to be required just as often in future, it is a question whether it would not be cheaper in the long run to have permanent shelter and erect stationary engines and pumps, the Rs 73583 already spent would have gone far to meet the cost of permanent erections and by using the most improved types of engines and pumps the cost of pumping would be much reduced.

(Sd) Donald Campbell
Col. R.E.
Chief Engineer

Transferred

Loc... 307½ M
67
Transferred to the Local and Municipal department.

Donald Campbell Col. R.E.
Secretary.

Copy
26.6.96

The Local & Municipal Deptt
with original papers
returned.

[L. & M. 500—18-8-96.]

Public Works

Local & Munl. (189) Department.

CURRENT No. ~~12074~~ 8617

C.S. 1207 M + 2502 M.

Order No. 1105

TO BE RETURNED WITH REPLY.

Referred to the Chief Engineer for favour of remarks, with reference to para. 7 of his note dy. 28th October 1895 forwarded with the endorsement of the Public Works Department, No. 3146 C. dy 28th idem.

John Phillips
Lg. Asst. Secretary.

V.R. 27/9/96
Fort St. George
26th Sept. 1896

From the President, M.C, Madras.

W. W. No. 60

Dated ~~15.4.96~~

Received ~~20.4.96~~ 25.9.96

Registered — do —

Enclosures 6

Spare copies -

SUBJECT.

Submitting a report on the expenditure on pumping at the Red Hills Tank.

To Chief Engineer
The Public Works Department

No. L.S 4408

BACK PAPERS.

G.O.	No.	Department.	Date.
	2031	PW	17-1-96
	3146	"	28-10-95

FURTHER PAPERS.

G.O.	No.	Department.	Date.

Ends to letter No 60 dt/15th April 1896.

Municipal Office,
Madras, 10th April 1896.

TO

The Engineer,
M . M . C .

Sir,

With reference to G.O. No 2140 M. of 21st December 1895 I have the honor to give below the cost of pumping at Red Hills, since the breaching of the bund of the lake in November 1884, also the quantity of water raised by means of pumping during the same period.

2. Every endeavour was made to keep the expenses down. Daily check was exercised over the expenditure of labor and materials. Notwithstanding, however, the difficulties entailed, by carrying out the work nine miles from Head Quarters, and the necessity of providing against stoppages or accidents which would be very serious as some 450,000 people are dependent on our water supply, I believe it will be found on comparing the out-turn of work with the money spent, that there was no waste.

3. The following statement shows the expenditure incurred the quantity of water pumped and the cost of pumping I,000 gallons excluding cost of moving Machinery and purchase of new plant:

2

Year	cost of moving and erecting Machinery, temporary sheds for workmen to live in, repairing Machinery, abandoning &c	Cost of New Machinery &c	Cost of pumping	Pumping period	Quantity of water pumped in gallons.	Average lift	Cost of Pumping 1000 gallons R. a. p.	Total Expenditure incurred &c.
1884-85	Rs 11665	Rs 15500	Rs 25835	8 1/2	459,375,000	8	. . 11	Rs. 53000
1887	2364	.	21000	4 1/2	561,250,000	7	. . 7	23364
1889	4397	.	.	.	.	.	. . .	4397
1890	491	.	.	.	.	.	. . .	491
1891	4585	.	17650	4 1/2	798,750,000	7	. . 4 1/4	22235
1892	4588	.	13714	3 3/4	631,250,000	7	. . 4 1/3	18302
1893	4385	.	12799	3	494,564,000	7	. . 4 4/5	17184
1894	6173	.	.	.	. .	.	. . .	6173
1895	6198	.	.	.	.	.	. . .	6198
	25,929		90598					151344

W.M.E.

Assistant Engr

4. Owing to the suddenness of the breach of the lake bund in November 1884, and the heavy rain that had fallen, and the urgency of the work, we experienced great difficulty in conveying the Machinery to the three sites, viz, Seven Wells, Korattore lake, and Red Hills lake and again in conveying the Machinery from the Seven Wells and the Korattore lake to the Red Hills considerable allowance should therefore be made for the heavy expenditure incurred during this year.

5. During the years 1886, 1889, 1890, 1894 and 1895 there was no pumping, the level of the lake however, fell in 1889,1894 and 1895 so low that, all arrangements had to be made at the Red Hills, and the staff kept there in readiness for the work,sheds put up to house the workmen, and about Rs 2,000 fuel purchased and kept in stock. The difference in expenditure between 1889, 1894 and 1895 when there was no pumping was due to the staff being kept in readiness for work in the former year for only 2 months, while they had to be kept in the latter years for 3 months.

6. The total cost of pumping during the four ordinary years viz 1887, 1891, 1892 and 1893 was Rs 81,085 or a little over Rs 20,000 per annum. This is the figure given in my Memorandum referred to in the G.O above quoted.

7. The variations shewn in the cost for pumping 1,000 gallons is chiefly due to the price paid for the fuel in each year. In 1887, Australian Coal was used and Rs 22-8-o per ton was paid inclusive of cart hire to the Red Hills. This coal is as one is to 2½ of Casuarina wood and would bring out the value of the latter for this year as Rs 9 per ton.

8. In the subsequent years Casuarina wood was used and the rates are given below:-

In 1887	cost of coal converted to cost of wood Rs	9--o-o	per ton
1891	do Casuarina wood Rs	6--8-o	do
1892	do	5--6-4	do
1893	do	7-11-6	do

9. The cheapest Indian method of raising water is by picottah, and for lifts below IO feet it is believed that steam

Machinery

Machinery can hardly cope with it in cheapness. Yet I find when comparing the work done by us at Red Hills with that at the Seven Wells where picottahs have been in use for over I00 years that we have worked in some years at even a lower cost. The total quantity raised daily i.e. in 24 hours by a single picottah at the Seven Wells is 60,000 gallons, and this by 3 reliefs of 2 men each. Each man is paid Rs 8 per mensem or a little over 4 annas a day, but taking 4 annas a day for our purpose, we have 60,000 gallons raised daily for Rs 1-8-o or about pies 5 per 1,000 gallons and when the conditions under which both places are worked is taken into account, I believe it will be admitted that the greatest economy must have been exercised by us, to have been able to keep down the expenditure to the cheapest method in raising the water obtainable in India.

I0. I may mention here that, we had only one Driver on, for each 8 hours shift, and he had to look after the 4 Engines at work, aggregating about 40 H.P Nominal, and 4 Centrefugal pumps, and this Driver was paid at Rs 50 a month, or a little over 6 annas a day for each Engine. To each Engine and pump, a Fireman, Pumpman, and set of coolies were of course given and over the whole 3 shifts; a Superintendent on Rs I00 was placed, with a Store-keeper, Time-clerk and 2 Store-coolies &c.

Asstt.Mech.Engineer.

P.W.
1.

P. W. No. 60.

MUNICIPALITY OF MADRAS,
Public Works Department,
Madras, 15 April 1896
Despatched 18-4-96.

From

LIEUT.-COL. G. M. J. MOORE, C. I. E.,
President, Municipal Commission.

To

The Chief Secretary to Government,
Fort St George.

SIR,

Enclosure.
nil

With reference to G.O. No 2140 M. dated 21st December 1895 (para 7) I have to submit the accompanying report on the pumping at the Red Hills Lake.

I think it will be admitted that far from extraordinary waste, there has been most careful supervision.

I have the honor to be,
Sir,
Your most obedient servant,
G M Moore Lt.-Col.
President, M.M.C.

Local & Municipal Dept.

No. CURRENT No. 1207/M

1896-97.

Madras Municipality.

From

The President,
Municipal Commission,
MADRAS.

To

The Chief Secretary
to Government
Fort St George

W. P. W. No. 60

Dated 15
Despd. 18 April 1896
Recd. 20 APR. 96

Enc. one

Subject.

Re the Pumping at the Red Hills
Submitting a report—

2140 & 24-12-95

C. S.

Reference 543 / 12/5/96

The President will be requested to report the details of the expenditure shown in the Column headed "cost of pumping" in the statement contained in para 3 of Mr. Loane's report. It is presumed that Col. 2 includes the cost of establishment.

S.D. 2/5/96.

W.W.S. 5.5.96

J.E. 9/5/96

Rec'd papers together S.D. 14/5/96.

Despd. 12/5/96

Copy to Asst.

S.D. 14/5/96

For the President M.C. Madras

with

With Refce

S.D. 14/5/96

Exd. 5.3.98

8617/98

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

Local & Munl. (1896) Department.

CURRENT No. 2502/96

Order

From *The President, Municipal Commission, Madras.*

W. W. No. *952*

Dated *3-9-96*

Received *5-9-96*

Registered *" " "*

Enclosures *2*

Spare copies

SUBJECT.

Submitting a revised statement and details of cost of pumping.

12/9.

BACK PAPERS.

G.O.	No.	Department.	Date.

FURTHER PAPERS.

G.O.	No.	Department.	Date.

1896-97

Madras Municipality.

From

The President,

Municipal Commission,

MADRAS.

To

The Chief Secretary
to Government
Fort St. George

W. P. W. No. 952

Dated 3.2.

Despd. 5.

Recd. 5 SEP 96

5th September 1896

Enc. Two.

Subject.

Submitting a revised Statement and details of cost of pumping.

Details of cost of Pumping. Encls No II of letter No. 952.

year	Cost of Moving and erecting Machinery temporary sheds for workmen to live in repairing Machine Advertising &c
1884-85	17182
1887	10567
1889	4397
1890	491
1891	3934
1892	4609
1893	4532
1894	6173
1895	6198
	25446
	58083

Madras
3rd September 1896

Year Month		Particulars	Amount		
	"				
	"	Pay of Overseer, Store-Keeper &ca ——— Do ———	95	"	"
	5	Wages of Engine Driver, Coolies &ca for August/85	467	1	11
		Wages of Coolies &ca for W. Ending 5th & 12th Septr/85	24	11	2
	9	Supply of 250 Tons of Casurina wood to Soorapaud in Sept/85	2242	3	"
July		Supply of Articles in July/85	150	2	
Augt		——— Do ——— August/85	100	11	2
Octr	26	Supply of 150 Tons of Casurina wood to Soor... in Sept/85	1345	5	"
	"	——— Do ——— 30 ——— Do ——— Do	322	8	"
	31	Stores issued in May/85	137	5	
	"	——— Do ——— June/85	120	4	

(first row amount: 232 11 6)

Details of cost of Pumping Engls No II of letter no. 952. 1/9

Year Month Date	Particulars	Amount		
1885				
June 10	Pay of Engine Drivers &c for the 1st½ half month of May/85	65	9	1
16	Cost of 100 Tons of Casurina wood supplied at Soorapaud Sluice Red Hills during May/85	897	2	1
"	Pay of Engine Drivers, Watchman &c for May/85	466	2	5
July 2	Do &c and coolies employed for removing Engine &c from Kovalam to Soorapaud in June/85	521	8	1
10	Pay of Engine Drivers, Firemen &c for June/85	371	13	8
24	Cost of 200 Tons of Casurina wood supplied at Soorapaud in June/85	1793	12	
31	Wages of Engine Drivers, Firemen, Pumpmen &c for the 1st½ half month of July/85	483	1	5
Augst 7	Supply of 200 Tons of Casurina wood to Soorapaud in June/85	1793	12	.
14	Wages of Fitter &c for June/85	38	15	9
June	Supply of Articles in June/85	129	7	6
May	Do May/85	18	8	9
Augst 1st 28	Supply of Stationery	3	15	64
21	Cost of Rubber Rings for Gauge Glasses	1	8	.
28	Wages of Engine Drivers, Firemen &c for July/85	371	4	7
Septr 14	Supply of 200 Tons Casurina wood to Soorapaud in July/85	1793	12	.
"	" 100 Tons Do August/85	896	14	.
23	Wages of Coolies for August/85 carting Casurina wood and cost of Straw for covering Store Room &c	69	12	8
Octr 3	Wages of Engine Driver, coolies &c for August/85	359	2	11 8
"	Do Firemen &c for September/85	258	2	3
"	Do Do Do	234	11	3
"				
"	Pay of Overseer, Store-Keeper &c Do	232	11	6
5	Wages of Engine Driver, Coolies &c for August/85	95	"	"
	Wages of Coolies &c for W. Ending 5th & 12th Septr/85	467	1	11 3 5
9	Supply of 250 Tons of Casurina wood to Soorapaud in Sept/85	24	11	2 6
July	Supply of Articles in July/85	2242	3	" " 6
Augt 7	Do August/85	150	25	" "
Octr 26	Supply of 150 Tons of Casurina wood to Soorapaud in Sept/85	100	11	2 12
"	Do 30 Do Do Do	1345	5	3 1
31	Stores issued in May/85	322	8	"
"	Do June/85	137	5	
		120	4	
				158

Year Month & Day		Particulars	Amount.		
		Brought forward Rs	15807	1	4
1885					
Octr	31	Stores issued in July/85	108	13	8
Novr	2	Wages of coolies for carting Firewood in Octr/85	2	15	5
	"	Supply of Stationery in August/85	1	13	8
	9	Supply of Articles during Septr/85	83	5	4
	"	Wages of Engine Driver, Fireman &c for Octr/85	846	3	-
	19	Supply of 100 Tons Casurina wood in Octr/85	896	14	-
	23	Supply of Stationery in Septr/85	1	13	11
	"	do do Octr/85	1	13	5
	"	Supply of 50 Tons Casurina wood in Novr/85	448	7	-
Decr	3	Pay of Overseer, Store-Keeper, Engine Driver &c for Novr/85	480	10	3
	"	Supply of 41 Tons 6 Cwts of Casurina wood in Novr/85	370	6	6
	7	Pay of Overseer, Drivers &c for Novr/85	751	3	11
	8	Supply of Articles in October/85	45	13	-
	16	during Novr/85	36	8	-
	19	" Supply of 6 Tons, 15 cwts, 2 qrs of Casurina wood from the New Water Supply Scheme in Octr/85	72	13	4
	"	Articles received from Stores in Decr/85	361	-	4
Decr		Total Rs	20317	12	1
1887					
Augst	2	Value of 60 Tons, of Australian Coal Supplied in July/87	990	-	-
	"	" 50 Tons do do June/87	825	-	-
	4	Salary of temporary establishment for July/87	402	7	8
	5	Wages of Workmen for July/87	9	14	-
	9	Carrying 110 Tons of Coal to Red Hills in July/87	495	-	-
	17	do 90 Tons do do	405	-	
	19	Value of 90 Tons of Australian Coal Supplied in Aug/87	1485	-	
	"	Salary of Temporary Establishment from 1st to 15th Augt/87	388	9	5
	25	Stores issued in June/87	675	6	1
Septr	9	Carting 90 Tons of Coal to Red Hills in Augt/87	405	-	-
	15	Value of 90 Tons of Australian Coal Supplied in Septr/87	1485	-	-
		Supply of Articles during July/87	179	12	-
		Carried Over Rs	7746	1	

Month	Date	Particulars	Amount.		
		Brought forward Rs	7,746	1	4
	15	Supply of Articles during Aug/87	210	10	7
	20	Salary of Pumping Establishment from 16th Aug to 15th Sept/87	825	0	10
	30	Value of 40 Tons of Coal taken from Royapooram Pumping Station in Sept/87	680	-	-
	"	Stores issued in July/87	3	-	-
	"	do August/87	2	3	6
	"	Pay of Pumping Establishment from 16th Sept to 15th Oct/87	797	11	6
Oct	20	do do do	20	6	6
	21	do Value of 50 Tons of Australian Coal supplied in Oct/87	825	-	-
	26	Pay of Pumping Establishment from 16th to 23rd Oct/87	192	15	-
	28	Value of 30 Tons, 6 cwts, 3 qrs of Australian Coal supplied in October 1887	500	9	1
Nov.	2	Carting 50 Tons of coal to Red Hills in Oct/87	225	"	"
	"	do 40 Tons do do	180	"	"
	"	Value of 5 Tons of Australian Coal supplied in Oct/87	82	8	-
	"	Carting 30 Tons, 6 cwts, 3 qrs of Coal to Red Hills in Oct/87	136	8	4
	"	Hire of 67 Gunny bags supplied for conveying coal to Red Hills in Oct/87	20	15	"
			312	4	11
	15	Supply of Articles during Oct 87	"	10	4
	18	Supply of Stationery in August/87	22	8	-
Dec	2	Carting 5 Tons of Coal in Oct/87	"	3	2
	16	Supply of Stationery in Aug/87	12	14	6
	"	Stores issued in October/87			
		Total Rs	12,797	2	7
1891					
May	22	Value of 20 Tons of Singareni Coal delivered at Soorapand Red Hills in May/91	345	"	
	29	Wages of Engine Driver, Fireman &c for the month ending 15th " May/91	120	1	
	"	Pay of Pumping Staff for month ending 15th " May/91	73	2	6
June	6	Wages of Engine Driver, Fireman &c for month Ending 31st " May/91	134	7	
	"	Pay of Pumping Staff for month ending 31st " May/91	78	7	
		Carried Over Rs	751	2	

Year Month & Date	Month Date	Particulars	Amount
1891	91	Brought forward Rs	7 51 2 4
Sept	June 12	Wages of Engine Driver &c for May/91	66 . 9
	23	Pay of Pumping Staff for the 1st half of June/91	349 9 3
	29	Wages of Pumping Station Labourers for month Ending 15th June/91	78 14 4
	30	Value of 125 Tons of green Casurina wood Supplied in June/91	746 1 6
	July 1	Supply of Articles in May/91	160 14 9
	9	Wages of workmen employed at Red Hills for month ending 30th June/91	489 . .
	"	Wages of Engine Driver &c for month ending 30th June/91	65 10 .
	18	Value of 20 Tons of Coal Supplied in July/91	335 . .
	24	Wages of Pumping Station Labourers for month ending 15th July/91	64 4 .
	"	Wages of workmen employed at Red Hills for pumping for the month ending 15th July/91	486 . 7
	Augst 1	Value of 125 Tons of green Casurina wood Supplied at Red Hills in July/91	746 1 6
	3	Do 20 Tons of Coal for July/91	335 . .
	6	Supply of 250 Tons of Casurina wood in July/91	1492 3 .
	"	Do 20 Tons of Coal in July/91	335 . .
	7	Wages of Engine Driver &c for July/91	79 . 2
	8	Wages of workmen employed at Red Hills for month ending 31st July/91	520 12 7
	10	Value of 20 Tons of Coal Supplied in July/91	335 . .
	17	Supply of Stationery in July/91	" 11 .
	18	Value of 125 Tons green Casurina wood Supplied in Aug/91	746 1 6
	"	Value of 20 Tons of Coal Supplied in August/91	335 . .
	20	Supply of Articles in June/91	36 13 .
	21	Do Do	42 4 3
	"	Do July/91	66 14 3
	24	Wages of Pumping Staff employed at Red Hills for month ending 15th August/91	488 14 .
	26	Do Do Do	54 4 6
	Septr 1	Supply of Articles during August/91	61 1 6
	11	Wages of Pumping Staff employed at Red Hills for Aug/91	519 15 9
	"	Value of 20 Tons of Coal Supplied in Aug/91	335 . .
	14	Stores issued in June 1891	103 7 .
		Carried Over Rs	10226 1 1

Year Month & Date		Particulars	Amount.		
		Brought forward Rs	10226	1	10
1891 Sept.	21	Wages of Red Hills pumping Staff for the 1st 15 days ending 15th Sept. /91	503	10	2
	24	Value of 125 Tons of green Casurina wood Supplied in Aug./91	746	1	6
	"	Wages of Pumping Station Labourers for month ending 15th Sept. /91	55	2	1
	28	Stores issued in May /91	94	11	-
	19	Supplying Articles, coolies &c to Red Hills pumping by Workshop during June /91	1147	2	3
Oct.	1	Value of 40 Tons of Coal supplied during Sept. /91	670	-	-
	7	Wages of Red Hills pumping Staff for the half month ending 30th Sept. /91	505	3	9
	8	Value of 125 Tons Casurina wood Supplied in Sept. /91	746	1	6
	"	Wages of Engine Driver &c for Sept. /91	78	12	-
	15	Stores issued in August 1891	100	-	-
	23	Value of 125 Tons green Casurina wood Supplied in Sept./91	746	1	6
	"	Wages of Red Hills pumping Staff for 15 days ending 15th Oct/91	488	14	6
	26	Do do month ending Oct /91	52	5	1
		Pumping water at Red Hills, Repairing Engines &c by Workshop during Oct /91	184	9	8
Nov.	6	Wages of Red Hills pumping Staff for half month ending 31st Oct /91	521	13	10
	12	Stores issued in Sept /91	131	3	2
	17	Supply of Articles during Oct. /91	67	8	3
	18	Pay of Pumping Staff for month ending 4th Nov. /91	21	7	6
	24	Value of 125 Tons green Casurina wood Supplied in Nov./91	746	1	6
	26	Wages of Pumping Station Labourers for month ending 15th Nov. 1891	57	14	5
Dec.	1	Supply of Articles in Sept. /91	37	5	6
⊗	7	Wages of watchman engaged at Red Hills pumping Station for Nov./91	36	9	-
	9	Wages of Engine Driver &c for Nov. /91	80	10	-
	18	Wages of Pumping Station Staff for month ending 15th Dec/91	55	5	6
	7	Pumping water at Red Hills by Workshop in Sept./91	200	1	2
		Total Rs	18300	13	1

Year Month + Date		Particulars	Amount.		
1892					
May	7	Carting 27 Tons Casurina wood to Red Hills pumping in May/92	40	8	-
	10	Wages of Watchmen employed at the Engines + Stores Red Hills for Apl/92	36	-	-
	"	Wages of Engine Drivers, Firemen & Pumpman from 25th to 30th April 1892	87	-	-
	"	Pay of Pumping Staff from 25th to 30th Apl/92	44	-	-
	11	Supply of Stationery in May/92	"	13	1
	12	Carting 40 Tons Casurina wood to Red Hills pumping in May/92	60	-	-
	21	Wages of Pumping Staff for month ending 15th May/92	521	15	5
	1	Value of 40 Tons Casurina wood supplied to Red Hills pumping in May/92	248	12	-
	"	Do Do Do	248	12	-
	"	Do Do Do	685	8	9
June	9	Do 125 Tons Do Do	555	7	7
	10	Wages of Red Hills pumping Staff for May/92	685	8	9
	"	Value of 125 Tons Casurina wood supplied	219	2	5
	"	Do 36 Tons, 10 cwts, 2 qrs Casurina wood supplied	13	-	8
	14	Overtime allowance to Engine Drivers of Pumping Station for May/92	767	13	-
	18	Value of 140 Tons Casurina wood supplied	3	3	7
	21	Wages of a Pumpman from 21st to 31st May/92	541	11	9
	"	Wages of Red Hills pumping Staff for month ending 15th June/92	767	13	-
	24	Value of 140 Tons Casurina wood supplied	19	8	-
	29	Carting 13 Tons Casurina wood to Red Hills	538	12	3
July	6	Wages of Red Hills pumping Staff for June/92	20	10	-
	11	Overtime allowance to Engine Drivers of Pumping Station for June 1892	523	-	2
	20	Wages of Red Hills pumping Staff for month ending 15th July 1892	1	-	-
	"	Supply of Stationery during July/92	548	7	-
	27	Value of 100 Tons Casurina wood supplied in June/92	556	14	-
Aug	9	Wages of Red Hills pumping Staff for July/92	548	7	-
	10	Value of 75 Tons Casurina wood supplied in July/92	274	3	6
	11	Do 50 Tons Do Aug/92	8558	-	-
		Carried Over Rs			

Year Month & Date		Particulars	Amount.		
1892					
May	7	Carting 27 Tons Casurina wood to Red Hills pumping in May/92	40	8	-
	10	Wages of Watchmen employed at the Engines & Stores Red Hills for Apl/92	36	-	-
	"	Wages of Engine Drivers, Firemen & Pumpman from 25th to 30th April 1892	87	-	-
	"	Pay of Pumping Staff from 25th to 30th Apl/92	44	-	-
	11	Supply of Stationery in May/92	"	13	1
	12	Carting 40 Tons Casurina wood to Red Hills pumping in May/92	60	-	-
	21	Wages of Pumping Staff for month ending 15th May/92	521	15	5
	1	Value of 40 Tons Casurina wood supplied to Red Hills pumping in May/92	248	12	-
	"	do do	248	12	-
	"	do do	685	8	9
June	9	do 125 Tons do	555	7	7
	10	Wages of Red Hills pumping Staff for May/92	685	8	9
	"	Value of 125 Tons Casurina wood supplied	219	2	5
	"	do 36 Tons, 10 cwts, 2 qrs Casurina wood supplied	13	-	8
	14	Overtime allowance to Engine Drivers of Pumping Station for May/92			
	18	Value of 140 Tons Casurina wood supplied	767	13	-
	21	Wages of a Pumpman from 21st to 31st May/92	3	3	7
	"	Wages of Red Hills pumping Staff for month ending 15th June/92	541	11	9
	24	Value of 140 Tons Casurina wood supplied	767	13	-
	29	Carting 13 Tons Casurina wood to Red Hills	19	8	-
July	6	Wages of Red Hills pumping Staff for June/92	538	12	3
	11	Overtime allowance to Engine Drivers of Pumping Station for June 1892	20	10	-
	20	Wages of Red Hills pumping Staff for month ending 15th July 1892	523	-	2
	"	Supply of Stationery during July/92	1	-	-
	27	Value of 100 Tons Casurina wood supplied in June/92	548	7	1
Aug	9	Wages of Red Hills pumping Staff for July/92	556	14	
	10	Value of 75 Tons Casurina wood supplied in July/92	548	7	7
	11	do 50 Tons do Aug/92	274	3	6
		Carried Over Rs	8558	-	-

Year Month & Date		Particulars	Amount		
		Brought forward Rs	8,558	-	7
1892 Aug	13	Supply of Stationery in July/92	"	14	2
	19	Value of 20 Tons green Casurina wood supplied in Aug/92	109	11	-
	20	Wages of Pumping Staff at Red Hills for the 1st to 15th days of August/92	523	4	9
	29	Value of 50 Tons green Casurina wood supplied in July/92	274	3	6
	"	do 80 Tons do do	438	12	-
	"	do 100 Tons do do	548	7	-
	"	Supply of Articles during June/92	11	6	5
	30	do Stationery do	-	4	8
	"	do do do	1	11	-
	"	do Articles do	53	4	4
Sept	5	Wages of Red Hills pumping Staff for Aug/92	559	0	4
	7	Value of 100 Tons Casurina wood supplied in Aug/92	548	7	-
	10	do do do	548	7	-
	13	Supply of Articles in May/92	101	5	2
	22	Wages of Driver, Fireman &c from 1st to 11th Sept/92	96	3	7
	"	do do do	98	9	11
	"	do do for 3 days in Aug/92	19	-	11
	"	do do 1 day do	4	10	10
	"	do do 1 do do	4	9	10
	"	do do from 1st to 11th Sept/92	92	10	7
	27	Wages of Pumping Staff from 1st to 17th Sept/92	98	13	4
	"	Stores issued in May/92	132	7	3
	"	do June/92	165	7	9
Oct	3	Supply of Articles in July/92	34	12	4
	7	Wages of Watchman employed at Red Hills Engine & Stores from 16th to 30th Sept/92	9	-	-
	10	Supply of Articles in Aug/92	-	4	9
	17	do Stationery do	-	4	-
Nov	10	Wages of Watchman employed at Red Hills Engine & Stores for October/92	17	10	10
	11	Stores issued in July/92	82	7	9
Dec	9	Wages of Watchman employed at Red Hills Sheds for Nov 8/92	12	-	-
	14	Stores issued in September/92	34	8	3
		Carried Over Rs	13,180	12	1

Year Month & Date	Particulars	Amount.		
1892	Brought forward Rs	13,180	12	10
Dec. 14	Stores issued in Aug/92	204	2	8
17	Weighing wood &c by Workshop at Red Hills in July/92	190	.	5
21	Supply of Articles from July to September/92	117	10	8
	Total Rs	13,692	10	7
1893				
July 11	Wages of Pumping Staff for June/93	177	11	7
"	Pay of Pumping Staff do	81	.	11
26	Stores issued in April/93	41	15	8
27	Wages of Pumping Staff for the month ending 15th July/93	463	13	7
Aug 14	do do for the period ending 31st July/93	281	2	5
15	Supply of stationery during July/93	"	3	6
16	Wages of Coolies engaged in thatching Sheds & Kitchens of Drivers Quarters at Red Hills on 2nd July/93	6	5	.
28	Wages of Pumping Staff for the period ending 15th Aug/93	500	13	3
Sept 12	do do do 31st do	536	.	8
"	Cart hire for 200 Tons of Firewood to Red Hills in Aug/93	300	.	.
26	do 100 Tons do do	150	.	.
27	Wages of Pumping Staff from 1st to 15th Septr/93	510	8	10
Oct 7	Cart hire for 100 Tons Casurina wood to Red Hills in Sept/93	150	.	.
11	Wages of Pumping Staff from 16th to 30th Septr/93	387	3	1
"	do for September/93	132	14	5
18	Supply of Articles in June/93	63	.	3
20	do do	371	.	9
21	do do	313	8	5
25	Wages of Pumping Staff for the period ending 15th Oct/93	497	7	7
26	Cart hire for 200 Tons Casurina wood to Red Hills in September & October/93	300	.	.
Nov 7	Supply of Stationery in Sept/93	"	4	.
15	do Articles in July/93	187	10	11
"	do do	13	13	5
17	Cart hire for 200 Tons Casurina wood to Red Hills in Oct & Nov/93	300	.	.
	Carried Over Rs	5,766	10	3

Year Month Date	Particulars	Amount.		
1893	Brought forward Rs	5,766	10	3
Nov 20	Wages of Pumping Staff for the period Ending 31st Oct/93	537	15	6
30	Cart hire for 49¾ Tons Casurina wood to Red Hills in Nov/93	29	10	.
"	do 10 Tons do do	15	.	.
Dec 1	Wages of Pumping Staff for the period ending 15th Nov/93	442	5	9
"	Pay of Pumping Staff for Nov/93	49	11	1
"	Pay of Fireman at Red Hills pumping from 1st to 15th Aug/93	9	10	10
6	Stores issued in June/93	41	7	5
	do August/93	37	11	7
	do do	.	2	8
21	Carting 10 Tons Casurina wood from Royapuram pumping Station to Red Hills in Aug/93	9	8	6
Aug	Supply of Articles during June & Aug/93	4	3	2
Oct 6	Supply of Stationery in Oct/93	.	6	.
Nov	Value of 841 Tons 15 cwts of Casurina wood supplied from Royapuram Pumping Station to Red Hills pumping work from June to Nov/93	5234	10	1
"	Stores (Kerosine & Lamp Oil) issued in Nov/93	3	10	3
Sept	do do do Sept/93	32	11	.
Nov	Supply of Articles from Sept: to Nov/93	95	.	10
July	Stores issued in July/93	61	6	6
June	do June/93	88	15	3
Oct	do October/93	48	14	7
"	do do	125	14	.
Sept	do Sept:/93	5	10	5
Aug	do August/93	7	4	8
Nov	do Nov/93	4	5	6
	Stores Supplied do	8	13	2
	Total Rs	12,607	11	.

Rs 28/8/1

Sloane
Agt Engineer
28/8/96

Public Works Department,

Municipal Office,

Madras, 3rd September 1896.

Despd. 5th September 1896.

Local & Municipal Dept. 2502 M

R. W. No. 952

FROM

R.E.Ellis Esq. C.I.Inst.C.E., No.

Ag.President, Municipal Commission.

To

The Chief Secretary to Government,

Fort St. George.

SIR,

With reference to G.O. No.543 Local and Municipal dated 12th May 1896, I have the honor to submit a revised statement referred to in para 3 of Mr Loane's report and details of Col.3 as requested.

2 The errors in the original statement arose through wrong posting in the original Ledger which have now been checked and abstracted as regards cost of pumping.

3 The cost of establishment for the period that the pumps were worked is included in the cost of pumping and not in Col.2.

I have the honor to be,

Sir,

Your most obedient servant,

R.E.Ellis

Ag.President, M.C.

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189.

IN G.O., No. DATED
189 ,

CURRENT No.

ENCLOSURES TO C. No.

ADER OF GOVERNMENT	A	A	A	A	A	A	A
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ES NOT FILED UP, BEING MEANT FOR DESPATCH IN ORIGINAL.							

N.B.—
A = Copy in full.
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G.S.I
867/56