Public Works (1897) Department.

G.O., No. 187

DATED 22 February 1897

[Despatch Abstract.]

Land. Notice for the acquisition of required for the Perim 2nd branch channel made & ordered to be published in the Bombay Gazette

T.C 22/2/97

[P.W. 25. 5,000—30-11-96.]

Indexed. 3/3/97

BACK PAPERS.

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

FURTHER PAPERS.

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

Public Works (1897) Department.

CURRENT No. 1535

Urgent

Order No. 187 Dat 22.2.97

The notification, as amended by Government, is approved and will be published in the Fort St. George Gazette.

W.H.

10/2/97

Issue. 16/2/97

To
The Collector of Madura.
- Supt. Engineer, 5th Circle.
Notification & the Proc.

Notification published in page 243-44-45 of 23-2-97.

Dr 13/2/97
BR
15-2-97

From The Collector of Madura.

Ron C No. 398 of 1897

Dated 10 February 97

Received 11.2.97

Enclosures one

Spare copies

SUBJECT.

Requesting to cause the enclosed notification regarding the acquisition of land for the Periyar 12th Branch channel to be published in the Fort Saint George Gazette

CB
13/2/97
11-2-97

BACK PAPERS.

G.O.	No.	Department.	Date.

FURTHER PAPERS.

G.O.	No.	Department.	Date.

REFERENCE ON CURRENT No. 398/1897 epul

MADURA COLLECTOR'S OFFICE, 10 February 1897

From

J. Twigg Esquire,
Collector of
Madura.

To

The Secretary to Government,
Public Works *Department,*
Madras.

Sir,

I have the honor to forward herewith a draft declaration and schedule for the acquisition of 22.675 acres of land for the Periyar 12th Branch Channel and to request that the Government be moved to publish the notification in the Fort Saint George Gazette. at as early date as the lands are required urgently.

2. The owners are willing to part with their land.

3. The estimated cost of the land to be taken up may be omitted when publishing the notification in the Fort Saint George Gazette.

4. The Special Deputy Collector, Madura may be authorized to perform the functions of a Collector under the Act and to take order for the acquisition of the land, under section 17 of the Act I of 1894.

I have the honor to be,

Sir,

Your most obedient Servant,

Srinivasacha

For *Collector.*

21/4.2

9/2/97

From

The Collector of

Madura.

Dated }
Received } 189 .

Reference on C No.

Enclosure.

SUBJECT.

Requesting to cause the enclosed notification regarding the acquisition of land for

to be published in the Fort Saint George Gazette.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following papers :—

From S. D. PEARS, Esq., Superintendent of Works, No. I Periyár Division, to the Chief Engineer, Public Works Department, dated Periyár, 30th September 1893, No. 150 C.E.

I have the honour to submit revised estimates for the Periyár Project Head Works.

Main dam.
Right bank escape.
Left bank escape.
Water-shed cutting.
Water-shed tunnel.

2. For the 5 principal works marginally noted, the reasons for difference of revised from original estimates are explained in detail in the report accompanying each estimate.

3. The expenditure on K. buildings up to 31st August 1893 has been Rupees 2,13,281, or at the rate of Rs. 35,000 per annum. The cause of difference between this figure and that given in the original estimate is principally due to the fact that manual labour has been found available and has been largely and with great advantage substituted for the machine labour originally intended. The expenditure on construction and maintenance of cooly lines and of quarters for supervising establishment and on conservancy of camps has therefore been much in excess of anticipation. The class of buildings provided is mostly of a temporary nature, the cost of original construction being low and of maintenance high. It has been assumed that they will require to be maintained for four seasons more and that a few new buildings at Periyár will be required on the accession of the labour shortly to be set free by the completion of the Thekady works. The sum of Rs. 1,36,719 has on this assumption been allowed for future expenditure under buildings, bringing the total, including expenditure already incurred, to Rs. 3,50,000.

4. Under O. Miscellaneous, the expenditure to date has amounted to Rs. 1,59,609, of which by very much the larger portion has been due to the construction and improvements of Mulya Panjan canal. There is no reason to anticipate more than occasional small improvements to the canal, and the only other charge of importance against this head is the maintenance of the police escort for treasure from Periyakulam which costs about Rs. 1,100 per annum. Assuming as before four seasons for the completion of the work and allowing a lump sum of Rs. 5,000 per annum for such charges as those above mentioned, the total amount of revised estimate under O. Miscellaneous will be Rs. 1,80,000.

5. The excess over the original allowance of Rs. 50,000 for maintenance is due almost entirely to the flood of 24th July 1892, which involved such heavy charges in restoring the Mulya Panjan canal and Thekady-Periyár road that the total cost of maintenance for the year 1892–93 alone amounted to Rs. 34,287. Not to reckon on the recurrence of so expensive a misfortune, the sum of Rs. 10,000 per annum (or Rs. 40,000 for the four remaining seasons) will be sufficient for the maintenance of the road turbine channel, canal and telephone and for the annual removal of jungle

from the camps. Including past expenditure the total cost of maintenance will, therefore, be Rs. 97,000, of which Rs. 57,219 has been spent up to date.

6. The sum of Rs. 31,748 has been spent on 9 unforeseen subsidiary works enumerated in the margin, the necessities for which are recorded in Government Orders sanctioning each. These have been all completed and a further lump sum of Rs. 11,000 is provided in the present estimate for "Unforeseen works" which may be required in the future, making Rupees 43,000 in all for "Unforeseen works."

	Rs.
Tunnel turbine channel .. .. (Sanctioned by Suptg. Engr., 16th Dec. 1889, estimate Rs. 5,000)	5,177
Diversion of tunnel turbine channel .. .. (G.O., No. 318 I., 7th April 1891, estimate Rs. 7,175).	6,858
Putting bund to turbine channel reservoir .. .. .. (G.O., No. 317 I., 7th April 1891, estimate Rs. 3,750).	3,750
Revetment wall to carry troughs on tunnel turbine channel .. (Sanctioned by Suptg. Engr., Periyár Project, on 14th Oct. 1890, estimate Rs. 440).	371
Building a toe wall and making up slopes of Peermaad road at the reservoir .. .. (Sanctioned by Suptg. Engr. on 24th Oct. 1890, estimate Rs. 419).	348
Troughing the tunnel turbine channel .. .. .. (G.O., No. 649 I., 11th November 1890, estimate Rs. 4,790).	4,125
Tunnel shaft .. .. (Sanctioned by Suptg. Engr., 16th July 1889, estimate Rs. 4,500).	5,788
Enlarging the bye-wash of the Mulya Panjan at the head of the water-shed cutting at Thekady .. .. (Sanctioned by Chief Engr., Periyár Project, on 21st April 1890, estimate Rs. 2,490).	876
Rebuilding turbine channel weir at Periyár .. .. .. (G.O., No. 107 I., 4th February 1893, estimate Rs. 4,570).	4,455
Total ..	31,748

7. The expenditure up to date on tools and plant is Rs. 6,28,739, the unforeseen items which cause the excess over the original estimate being principally one steam dredger Rs. 18,100, a second steam launch and 4 iron barges Rs. 15,000, the steam plant from Ceylon required for the supplementary shaft of the water-shed tunnel Rs. 23,800, and an extra set of steam stone-breaking apparatus Rs. 18,000. The maintenance of tools and plant has also been more expensive than expected amounting to about Rs. 17,000 annually exclusive of the replacing of worn parts of machinery. Allowing Rs. 17,000 per annum for 3 years maintenance, Rs. 6,000 per annum for 3 years for purchase of tools, Rs. 2,500 per annum for 4 years for replacing worn stone-breaker jaws, Rs. 1,500 per annum for 4 years for other spare parts of machinery, Rs. 10,000 for the third steam launch indented for in this office No. 105 C.E., dated 2nd August 1893, Rs. 9,000 for another stone-breaker, Rs. 6,000 for another rope (upper section) for A. ropeway, and Rs. 3,000 for another rope for B. ropeway, the total revised amount to be provided under tools and plant (including expenditure up to date) becomes Rupees 7,42,000. A considerable sum will probably be eventually realized by the transfer and sale of machinery on the close of the works, but this has not been taken into account, being quite impossible to estimate.

From S. D. PEARS, Esq., Superintendent of Works, No. I Periyár Division, to the Chief Engineer, Public Works Department, dated Periyár, 7th December 1893, No. 210 C.E.

I have the honour to inform you that, at the time of my preparing the revised estimate for water-shed cutting last March, there was a considerable amount due to piece-workers for work done in December, January and February. Payment of this amount not having then been made, neither quantity nor amount appeared in the division office accounts of *work done* to end of February. On the other hand, the work in question having been done before the end of February, did not appear in the Sub-division officer's estimated figures of work *remaining to be done* on 1st March. I regret that I therefore lost sight of it and made no provision for it in the revised estimate. The quantity thus unaccounted for was 70,849 cubic feet; the amount (including various arrears, recoveries of advances and other adjustments) Rs. 16,025. The proportion of loss on rice bazaar, debitable to water-shed cutting, having also been settled only in October 1893, was omitted from this estimate. Its amount for this work is Rs. 947. A corrected copy of the revised estimate is attached with these omissions rectified.

The proportion of the loss on rice bazaar debitable to water shed tunnel is Rs. 1,705, which I beg that you will be good enough to add if you think necessary.

The northward tunnelling from No. 2 shaft will probably be a little more expensive than provided for in the estimate on account of the pumping which could not be foreseen when the estimate was made. It is still quite uncertain how much pumping will be required, but it might be as well to add Rs. 5 per running foot to the rate allowed in the revised estimate.

The proportion of loss on rice bazaar debitable to main dam is Rs. 6,771. This may also be added if you think necessary, but the estimate is so liberal that except for the sake of uniformity in treating the four works I do not think the addition necessary.

Note by the Chief Engineer, Public Works Department.

The revised estimate for the Periyár Project as now submitted amounts to Rs. 87,50,000, being an excess of Rs. 23,10,087 on the amount originally sanctioned by the Secretary of State.

2. This large excess, which occurs entirely on the head works, is due to various causes—some common to the works as a whole, some special to the various component parts.

3. Among the causes of the former class, the principal is the insufficiency of the rates allowed in the original estimates. It must be frankly admitted that these rates were much too low; it was expected that the whole work would be done by daily labour with gangs of men carefully drilled and watched and that machinery would be used to a much larger extent than has been found practicable. These expectations were not realised; it was found impossible with the staff available (and it is doubtful whether it would have been possible with any reasonable amount of establishment) to train and drill the labour in the way proposed, and it became necessary to fall back upon the ordinary methods of "piece-work." Time being all important the piece-workers have been practically masters of the situation and we have had to pay rates enormously in excess of what would have been necessary if the work could have been done in a more leisurely fashion and if the supply of labour had been unlimited.

4. The rates actually paid appear, and are, high, but it must be borne in mind that only a very insignificant fraction of the labour came from a distance of less than sixty miles and most of it from distances greatly exceeding this amount, that each man worked on an average for certainly not more than eight months in the year, and that the enforced idleness caused by the stoppage of work during each hot weather and the loss of time involved in the journeys to and from the labourers' homes had in some form or other to be paid for.

5. Another cause which has certainly tended towards a general increase of prices is the political condition under which the works have been carried out. This is a subject on which I wish to say as little as possible, because my views are not in accordance with those of the Government of Madras, but it is impossible to avoid all allusion to it. When the estimates were prepared it was assumed, as a matter of course, that the site of the works and the ground in their neighbourhood would be declared British territory either permanently or for so long as the works were in course of construction. This was not done, and, without going into details of this portion of the history of the works, it may be said in general terms that, for the first four years of their progress, there was absolutely no machinery for maintaining order or for the protection of life and property in the camps, except such irregular and extra-legal machinery as was created by the officers in charge; at a later period a limited criminal jurisdiction was ceded by the Government of Travancore, but the concession was so narrowed and limited that it was almost worthless, and even at the present time the conditions of life in the project camps are by no means such as should prevail among a community of some six thousand British subjects. What the financial effect of this state of things has been, it is of course impossible to say with any approach to accuracy; but it is certain that any cause which renders a work attractive tends to reduce prices and any cause which renders it unattractive tends to increase them.

6. A third somewhat important cause of excess has been the enormous cost of transport of materials, especially of lime, of which some eighty thousand tons have been or will be required. This cause has affected all the works more or less, though its principal effect has been on the main dam. The wire ropeway for conveying lime-stone from the foot of the ghât to Thekady camp has been most successful and economical when at work, but the difficulties in erection were very much greater than was expected; it was not until 1891 that it was got to work at all, and since then its working has been by no means uniform or constant, partly owing to the frequent repairs which have been found necessary and partly owing to the uncertainty of the water-supply of the stream which provides the power for driving it. By the time the work is completed it will probably be found that at least half the total quantity of lime used has been brought up by ordinary carts at a cost of about ten times that of carriage by the ropeway.

7. The cost of carriage from Thekady to the site of the dam has also been greatly in excess of what was expected; I have never ceased to regret that I did not adhere to my first idea of a light railway, worked by locomotives, for this portion of the journey. It would have saved its cost over and over again and have been both cheaper and more trustworthy than the combined road and water carriage which has actually been adopted.

8. As regards the individual works, the most important and the one on which there has been the largest excess is the main dam. The most important of all the causes specially affecting the cost of this work has been the unexpected discovery of the chasm in the centre of the bed of the river. There was nothing in the surveys on which the original estimate was based to indicate the existence of this chasm and it was supposed that the bed was of fairly even rock at a level little if at all below the zero of the project surveys. The whole conditions of working were changed by the discovery that a chasm some sixty feet wide and going down to from twelve to eighteen feet below this datum extended through the whole length occupied by the dam. The history of the measures adopted for meeting the difficulties thus introduced is contained in former reports and need not be further alluded to here.

9. Second only in importance to the cause of excess just mentioned was the unfortunate decision of the Government of India to prohibit a low level tunnel through the rock on the flank of the dam for the carriage of the ordinary discharge of the river during the construction of the dam. This decision was based upon a note of the then Inspector-General of Irrigation, which I have hitherto refrained from answering or discussing, but which it is necessary now to notice, however briefly.

10. The note in question is only explicable on the supposition that Colonel Brownlow had not read the report which accompanied the project estimates with sufficient care to understand what was really proposed and was unacquainted with what had been done in connection with similar works elsewhere. There has been an absolutely complete consensus of opinion among all the Engineers who have seen the works or with whom I have discussed the matter, and that is to the effect that the plan originally proposed might have been carried out with perfect safety and would have been immeasurably superior to that which has actually been adopted. I have no hesitation in saying that Colonel Brownlow's action in the matter has added a lakh of rupees to the cost of the work and a year to the time occupied in its construction.

11. The cost of removing the surface soil has been enormously in excess of what was estimated; not only has the quantity been much greater, but a large portion of the soil removed has consisted of huge boulders requiring blasting and of rotten or decomposed rock, the latter being exceedingly difficult to excavate and absolutely worthless for use in building.

12. The rates entered for the work already done are exceedingly high, but it is probable that a certain portion of the amount debited to concrete and rubble should have been really debited to protective works or contingencies. It is believed that the future cost will be rather less than the amount entered in the estimates, as the cost of transport will certainly diminish, and I think the Superintendent of Works has allowed too much for contingencies and petty supervision. The former will not be so large an item in the future as it has been in the past.

13. The quantities entered as "still to be done" refer to the beginning of this season; since then 163,000 cubic feet of rubble and 586,000 cubic feet of concrete have been put in, and the quantity remaining to be done is a little over three millions of cubic feet.

14. On the right bank escape the greater part of the excess is in the item of earthwork, the quantity to be removed being rather in excess of that estimated for, while the rate is very largely in excess. This is due mainly to the nature of the soil, a very large proportion of what was expected to be earth having turned out to be boulder and decomposed rock, but there is no doubt that the rate in the original estimate was altogether insufficient considering the distance to which the spoil had to be removed; in the item of rock the excess in rate is not so great as in most other items. This work is, for all practical purposes, completed.

15. The left bank escape is practically an extension of the main dam, nine-tenths of the cost being for masonry and concrete, and the excess in rates is due to the general causes mentioned in the beginning of this note.

16. In the water-shed cutting the original alignment has been completely departed from, as it was found that this alignment involved constant interruption from the Mulya Panjan stream; the line actually adopted is rather shorter than that originally proposed, but as it does not follow the lowest line of the valley up which it runs, it involves a considerably increased quantity of earthwork with a reduction in the quantity of rock to be removed. On the former item the excess in rates is not very large, but in the latter it is very heavy owing partly to the high lift. It was originally intended to run the rock straight out of the cutting and carry it at once to the main dam; this was found impracticable and the whole of the rock had to be stacked on the bank of the cutting; the narrowness of the space in which this deep cutting has had to be done has also tended to an increase of cost. There has been a very heavy expenditure on pumping and contingencies owing to the frequent flooding of the cutting by local drainage and by the irruption of the Mulya Panjan.

17. The alignment of the water-shed tunnel has also been altered from that originally intended with the result of a saving of about seven hundred of length of tunnel and an increase in the length of the open cutting at the northern end. The excess in rates for tunnelling is very large, but the original estimates were framed on very imperfect data; it was anticipated that the whole work would be done by machinery worked by water power, but the supply of the stream from which this power is derived turned out to be much less than was anticipated as already mentioned in connection with the question of transport, and in order to increase the rate of progress two shafts aggregating about 240 feet in depth were sunk and steam worked compressors erected at one of them; nearly half the total length of the tunnel has been executed by steam or by hand, both of which are much more expensive than water. The accounts of this work were not well kept in the early part of its progress, and it is by no means certain that the expenditure has been properly distributed among the various items. The cost of the shafts, for instance, which should have been shown separately, is included in the rate for tunnelling. About four hundred feet is all that remains to be done for this work, and it is probable that the cost will be somewhat less than Mr. Pears' estimate.

18. Under the head Miscellaneous, which includes a number of minor works, the original estimate will be very largely exceeded; this is mainly due to the cost of the dams and other works on the Mulya Panjan and to the cost of upkeep of the road, which has been larger than was expected owing to the length of time the execution of the works has occupied. I have already stated in connection with the question of transport my regret that this system of water carriage was ever adopted. A number of minor charges, such as cost of Police guards and other items, which were not anticipated when the original estimates were prepared, have also been debited to this head.

19. The cost of buildings has been increased by the enormous increase in the number of labourers required; when the original estimates were prepared, it was expected that the use of machinery would reduce the amount of labour required to about a thousand men. Owing to various causes, chief among which is the great

increase in the amount and cost of earthwork on the three principal works, the actual number of men employed has been about six thousand and the cost of housing them has correspondingly increased.

20. No provision was made in the original estimates for unforeseen works. A sum of Rs. 60,000 is now provided for this purpose.

21. Of the works provided for in the original estimates, the "Escape culvert" and "Turbine supply culvert," the estimates for which amounted together to Rs. 39,000, have been omitted as not required under present arrangements. No provision for compensation for land is included in the estimates for the head works, as the compensation to Travancore now takes the form of an annual rent instead of a single payment. The works in the Suruliyar valley, for which Rs. 3,30,000 were provided in the original estimates, have been omitted altogether for the reasons given in the papers recorded with G.O., No. 324 I., dated 10th April 1891. As yet it has not been found necessary to debit the project with any portion of the cost of improvements to the anicuts on the Suruli, and, should any such debit be necessary in the future, it will be insignificant in amount and can be met from the provision for unforeseen works.

22. The net result is an excess of Rs. 12,67,000 on the estimate for the head works exclusive of the increase under Tools and Plant.

23. On the estimate for the distribution works there is a reduction of Rs. 1,41,000. It does not seem necessary to consider in detail the estimates for individual works, but it may be said in general terms that the original estimates have been completely abandoned. These estimates were prepared in 1871–73 and were not revised by myself when the estimates for the head works were revised in 1882; this has now been done, the alignment of the channels having been altered and the design for every single masonry work completely redrawn.

24. The net result is an excess of about Rs. 1,03,000 on earthwork, which is sufficiently accounted for by the increase in prices since the original estimates were prepared, and a saving of about Rs. 40,000 on compensation for land and Rs. 2,04,000 on masonry works. The latter is entirely due to revision of designs and occurs mainly under the head of cross drainage works, aqueducts or superpassages having been substituted in every case for the inlets and outlets provided in the original estimates with a great saving of cost and an incalculable increase in efficiency.

25. It is not impossible that there will be a further saving under the head of "Distributaries," as the estimates for the lower branches have not yet been revised, but it is not likely to be large.

26. In the original estimate the cost of tools and machinery was included in the rates for the various kinds of work, but it has now been found more convenient to include it under the general head of Tools and Plant. The expenditure on this head has been much larger than was anticipated owing to causes among which the chief are the large amount of pumping required owing to the manner in which the foundations of the main dam had to be put in, the purchase of additional machinery in order to increase the speed of working on the tunnel, incessant pumping on the water-shed cutting, heavy cost of erection of the wire ropeways and the unexpected necessity for renewal of the ropes of these ropeways owing to the rapidity with which they wore out. The expenditure on plant for transportation both by land and water has also been much greater than was anticipated, and the cost of maintenance and working has been high owing to the high wages which have had to be paid to competent workmen. The increase under this head is Rs. 6,97,000.

27. There will probably be some saving by the sale of plant after use, but no credit is taken for it here, as it is impossible to estimate its amount with any accuracy. Looking to the cost of carriage from the Periyár to any place where the plant is likely to be useful, I am not sanguine as to any large sum being obtained from this source.

28. The charges for establishment and indirect charges are of course increased in proportion to the estimates for works and the result is an increase of Rs. 5,00,000 to the total of the estimate under this head.

29. Receipts on capital account to end of December 1893 amounted to Rs. 9,106 and a further sum of Rs. 3,894 is anticipated before the works are finished, making a total of Rs. 13,000.

30. It is somewhat doubtful what amount should be entered in the forecast statements as the probable revenue to be derived from the project, as no final estimate has yet been made as to the sum to be derived from the sale of the occupancy rights of waste lands.

31. In paragraph 4 of G.O. (Revenue Department), No. 153, dated 15th February 1892, it is decided that the increase of revenue shall be taken at Rs. 6,95,055, in paragraph 8 that the sale-proceeds of the tank-bed lands may be taken at Rs. 6,41,133, and in paragraph 7 that no waste lands shall be sold, but this latter decision is modified by G.O., No. 1026, dated 7th October 1892. No decision has, however, yet been arrived at as to the amount to be expected under this head, and for the present it appears impossible to estimate the return at a greater amount than Rs. 6,95,155 *plus* 4 per cent. on Rs. 6,41,133, making Rs. 7,20,700 in all, and this amount has therefore been entered in the forecast statements.

32. It is, however, nearly certain that this amount will be exceeded; we know now that the ordinary discharge of the river is larger than was originally anticipated and that some extension of irrigation on the right bank of the Vaigai will be possible. It is also more than probable that a substantial revenue will be derived in the near future from the sale of power for industrial purposes, but it is at present impossible to form any estimate as to the amount of this revenue; it may be anything from five thousand rupees to five lakhs.

(Signed) J. PENNYCUICK, Colonel, R.E.,
Chief Engineer, P.W.D.

29th January 1894.

Enclosures.

MADURA DISTRICT. MADRAS PRESIDENCY.

49. Capital Expenditure on Major Irrigation Works not charged to Revenue.

Comparative statement showing by departmental heads the original and revised estimates of the Periyár Project.

Departmental heads.	Original estimates.	Revised estimates.	Remarks.
	Rs.	Rs.	
Direct charges—			
Works	52,00,000	63,26,000	For details see next page.
Establishment	9,25,000	14,01,000	Actuals to end of 1892–93 *plus* 23 per cent. on further expenditure on works excluding land.
Tools and plant	60,000	7,57,000	Actual expenditure to end of 1892–93 .. .. Rs. 6,18,155 Further expenditure— Rs. No. I Periyár .. .. 1,23,845 „ II do. 15,000 1,38,845 7,57,000
Less receipts on Capital Account.	..	— 13,000	Actuals to end of December 1893 and 50 per cent. more for future recoveries.
Total ..	61,85,000	84,71,000	
Indirect charges—			
Loss by exchange	40,000	..	Included in tools and plant under direct charges.
Capitalized abatement of land revenue.	85,413	82,500	Actual charges to end of 1892–93 *plus* 1¼ times of further expenditure on land.
Leave and pension allowances ..	1,29,500	1,96,500	14 per cent. on establishment charges.
Total ..	2,54,913	2,79,000	
Grand Total ..	64,39,913	87,50,000	

COMPARATIVE statement showing by main and sub-heads the original and revised estimates for works of the Periyár Project.

—	Preliminary expenses.		Land.		Works and regulating works.		Falls and weirs.		River and hill torrent works.		Cross drainage works.		Bridges.	
	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
(1) Head works—														
Periyár valley—														
Main dam	..	..	..	..	9,20,000	24,60,000	..	..	..	..	..	..	..	..
Temporary dams	..	..	..	..	15,000	29,115	..	..	..	..	..	..	..	..
Escape culvert	..	..	..	..	25,000	..	..	..	..	..	..	..	..	..
Right bank escape	..	..	..	..	1,55,000	2,70,000	..	..	..	..	..	..	..	..
Left bank escape	..	..	..	..	46,000	79,885	..	..	..	..	..	..	..	..
Turbine supply culvert	..	..	..	..	14,000	..	..	..	..	..	..	..	..	..
Water-shed cutting	..	..	..	..	1,37,000	2,47,000	..	..	..	..	..	..	..	..
Water-shed tunnel	..	..	..	..	2,95,000	4,94,000	..	..	..	..	..	..	..	..
Suruliyár valley—														
Works	5,000	..	..	..	3,11,020	..	..	..	..	..	..	..	..	..
General	80,000	80,355	8,00,000	..	..	..	..	..	..	..	..	..	..	..
Total ..	85,000	80,355	8,00,000	..	19,18,020	35,80,000	..	..	..	..	..	..	..	..
(2) Main canals and branches—														
Main canal—														
General	18,000	24,708	..	..	..	..	..	..	..	..	90,400	74,102	15,700	26,138
1st reach	..	..	34,545	18,191	97,500	50,834	6,200	6,625	..	..	41,290	28,384	12,320	5,903
2nd do.	..	..	5,710	6,988	..	12,190	..	2,075	..	17,485	97,780	1,10,512	10,500	10,632
3rd do.	..	..	16,745	19,396	5,310	5,496	..	..	..	..	12,380	8,972	..	3,100
4th do.	..	..	8,455	5,584	1,770	1,388	..	750	..	..	93,340	55,373	7,650	7,361
5th do.	..	..	10,975	9,501	..	..	..	..	..	..	32,960	22,837	3,460	8,094
6th do.	..	..	12,205	3,837	..	..	..	3,929	..	..	37,140	20,402	2,140	7,324
7th do.	..	..	5,315	2,209	..	..	..	..	..	..	12,380	1,000	3,670	..
8th do.	..	..	7,475	1,038	..	8,159	..	2,440	..	..	24,760	12,639	..	..
9th do.	..	..	810	725	1,770	650	..	..	..	..	24,760	9,176	..	2,000
10th do.	..	..	810	361	1,770	650	..	..	..	..	91,320	22,770	2,380	7,110
11th do.	..	..	7,890	5,854	1,770	1,150	15,990	7,460	..	..	24,760	1,000	2,380	..
12th do.	..	..	3,600	500	..	..	..	1,000	..	..				
Total ..	18,000	24,708	1,14,535	74,184	1,09,890	80,508	22,190	24,279	..	17,485	5,83,270	3,67,167	60,200	77,662
(3) Distributaries—														
General	10,000	9,496	..	..	..	..	..	..	..	..	..	..	..	400
1st branch	..	..	16,250	15,554	1,770	936	5,820	6,196	..	..	5,480	3,620	..	645
2nd do.	..	..	810	810	1,770	1,114	1,950	2,645	..	..	2,740	952	960	

(a) Original estimates. (b) Revised estimates.

Comparative statement showing by main and sub-heads the original and revised estimates for works of the Periyár Project—*cont.*

—	Buildings.		Earthwork.		Miscellaneous.		Maintenance.		Unforeseen works.		Total.	
	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)
	16	17	18	19	20	21	22	23	24	25	26	27
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
(1) Head works—												
Periyár valley—											9,20,000	24,60,000
Main dam	..	..	..	..	..	..	..	..	..	..	15,000	29,115
Temporary dams	..	..	..	..	..	..	..	..	..	..	25,000	..
Escape culvert	..	..	..	..	..	..	..	..	..	..	1,55,000	2,70,000
Right bank escape	..	..	..	..	..	..	..	..	..	..	46,000	79,885
Left bank escape	..	..	..	..	..	..	..	..	..	..	14,000	..
Turbine supply culvert	..	..	..	..	..	..	..	..	..	..	1,37,000	2,47,000
Water-shed cutting	..	..	..	..	..	..	..	..	..	..	2,95,000	4,94,000
Water-shed tunnel	..	..	..	..	..	..	..	..	..	..	3,30,000	..
Suruliyár valley—							13,980	..	..	..		
Works	1,57,000	3,50,000	..	..	56,000	1,80,000	50,000	96,645	..	60,000	11,43,000	7,67,000
General												
Total ..	1,57,000	3,50,000	..	..	56,000	1,80,000	63,980	96,645	..	60,000	30,80,000	43,47,000
(2) Main canals and branches—												
Main canal—											81,000	50,592
General	10,000	..	..	..	..	8,786	53,000	17,098	..	..	3,85,000	3,39,779
1st reach	..	6,138	1,40,655	1,50,758	..	..	..	6,993	..	..	94,000	1,31,800
2nd do	..	..	34,680	53,541	..	..	..	5,234	..	..	2,02,000	2,58,498
3rd do.	..	244	71,665	1,03,228	..	..	..	8,990	..	..	31,000	46,620
4th do.	..	..	8,395	24,992	..	..	..	1,834	..	..	1,41,000	1,11,491
5th do.	..	4,300	29,035	30,300	..	..	..	4,656	..	..	84,000	90,109
6th do.	..	..	35,375	49,300	..	..	..	2,112	..	..	67,000	55,124
7th do.	..	..	22,405	22,405	..	..	..	2,784	..	..	33,000	29,899
8th do.	..	2,232	9,475	14,500	..	..	..	539	..	..	33,000	39,596
9th do.	..	14,438	5,660	10,099	..	..	..	1,045	..	..	31,000	17,809
10th do.	..	..	3,660	4,200	..	..	..	1,422	..	..	1,50,000	84,183
11th do.	..	..	30,650	39,512	..	..	..	327	..	..	35,000	8,500
12th do.	..	..	4,260	6,000	..	..	..	..	..	..		
Total ..	10,000	27,352	3,95,915	5,08,835	..	8,786	53,000	53,034	..	..	13,67,000	12,64,000
(3) Distributaries—												
General	5,000	1,600	..	..	..	..	40,000	37,736	..	4,844	55,000	53,676
1st branch	..	..	13,530	6,038	3,150	..	..	..	..	..	46,000	32,744
2nd do.	..	..	5,500	4,435	1,270	..	..	75	..	..	15,000	10,676

(a) Original estimates. (b) Revised estimates.

Comparative statement showing by main and sub-heads the original and revised estimates for works of the Periyár Project—*cont.*

—	Preliminary expenses.		Land.		Works and regulating works.		Falls and weirs.		River and hill torrent works.		Cross drainage works.		Bridges.	
	(*a*)	(*b*)	(*a*)	(*b*)	(*a*)	(*b*)	(*a*)	(*b*)	(*a*)	(*b*)	(*a*)	(*b*)	(*a*)	(*b*)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
(3) Distributaries—*cont.*														
3rd branch	..	..	3,150	3,150	4,020	3,884	8,700	9,809	..	..	2,740	1,003	..	615
4th do.	..	..	8,100	8,100	3,670	3,986	18,730	19,011	..	..	..	..	2,370	4,847
5th do.	..	..	2,525	2,525	2,250	1,551	10,470	9,441	..	..	1,500	..	790	330
6th do.	..	..	525	1,221	1,770	1,100	5,740	4,650	..	..	..	..	..	280
7th do.	..	..	1,000	1,000	1,770	1,100	4,590	4,590	..	..	..	..	..	..
8th do.	..	..	2,900	2,900	2,730	2,060	7,750	7,750	..	..	..	..	..	..
9th do.	..	..	12,950	12,950	6,670	5,490	38,930	47,330	..	..	16,440	5,000	3,500	3,140
10th do.	..	..	12,075	12,075	6,550	5,860	36,260	16,910	..	..	52,060	52,060	1,270	1,270
11th do.	..	..	3,150	3,150	2,250	1,530	4,680	7,680	..	..	..	..	960	960
12th do.	..	..	5,850	5,850	3,940	3,940	2,040	5,240	..	..	..	..	3,020	3,020
Total ..	10,000	9,496	69,285	69,285	42,160	32,551	1,45,660	1,41,252	..	..	80,960	62,635	12,870	15,507
Grand Total ..	1,13,000	1,14,559	9,83,820	1,43,469	20,70,070	36,93,059	1,67,850	1,65,531	..	17,485	6,64,230	4,29,802	73,070	93,169

(*a*) Original estimates. (*b*) Revised estimates.

Comparative statement showing by main and sub-heads the original and revised estimates for works of the Periyár Project—*cont.*

—	Buildings.		Earthwork.		Miscellaneous.		Maintenance.		Unforeseen works.		Total.	
	(*a*)	(*b*)	(*a*)	(*b*)	(*a*)	(*b*)	(*a*)	(*b*)	(*a*)	(*b*)	(*a*)	(*b*)
	16	17	18	19	20	21	22	23	24	25	26	27
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
(3) Distributaries—*cont.*												
3rd branch	..	..	9,240	8,335	4,150	3,490	..	912	..	..	32,000	31,198
4th do.	..	..	37,750	37,750	8,380	11,057	..	1,182	..	..	82,000	85,933
5th do.	..	..	10,665	10,665	2,590	3,250	..	95	..	..	30,790	27,857
6th do.	..	..	6,745	6,745	1,930	1,930	..	..	..	..	16,710	15,926
7th do.	..	..	1,460	1,460	1,280	1,280	..	..	..	..	10,100	9,430
8th do.	..	..	7,090	7,090	1,930	1,930	..	..	..	..	22,400	21,730
9th do.	..	..	56,640	56,640	14,870	13,440	..	..	..	..	1,50,000	1,47,390
10th do.	..	3,400	66,225	66,225	11,560	11,560	..	..	..	..	1,86,000	1,65,960
11th do.	..	..	13,150	13,150	3,810	3,810	..	..	..	..	28,000	30,280
12th do.	..	..	54,220	54,220	9,930	9,930	..	..	..	..	79,000	82,200
Total ..	5,000	5,000	2,82,215	2,72,753	64,850	61,677	40,000	40,000	..	4,844	7,53,000	7,15,000
Grand Total ..	1,72,000	3,82,352	6,78,130	7,51,588	1,20,850	2,50,463	1,56,980	1,89,679	..	64,844	52,00,000	63,26,000

(*a*) Original estimates. (*b*) Revised estimates.

Statement comparing the revised estimates for the works of the Periyár Project with the original estimates.

No.	Sub-head.	Miles.	Furlongs.	Feet.	Name of work.	Estimate sanctioned in G.O., No. 356 I., dated 27th April 1883. Amount.	Estimate sanctioned in G.O., No. 356 I., dated 27th April 1883. Total.	Revised estimate. Amount.	Revised estimate. Total.	References.
						Rs.	Rs.	Rs.	Rs.	
					49. Capital Expenditure not charged to Revenue.					
					Periyár Project.					
					Direct Charges.					
					I. Works.					
					No. I Periyár Division.					
					(1) Head Works.					
					Periyár Valley.					
1	Preliminary expenses.	..	..	..	Preliminary expenditure	80,000	80,000	80,355	80,355	
2	Land ..	..	..	..	Compensation to Travancore Government for site of works ..	8,00,000	8,00,000	..	..	
3	Works ..	..	..	..	Main dam	9,20,000		24,60,000		Completed.
4					Temporary dams	15,000		29,115		
5					Escape culvert	25,000		..		
6					Turbine supply culvert	14,000		..		
7					Right bank escape	1,55,000		2,70,000		
8					Left bank escape	46,000		79,885		
9					Water-shed cutting	1,37,000		2,47,000		
10					Water-shed tunnel	2,95,000		4,94,000		
							16,07,000		35,80,000	
11	Buildings ..	..	..	..	Buildings	1,57,000	1,57,000	3,50,000	3,50,000	
12	Miscellaneous..	..	..	..	Miscellaneous items	56,000	56,000	1,80,000	1,80,000	
13	Maintenance ..	..	..	..	Maintenance during construction	50,000	50,000	96,645	96,645	
14	Unforeseen works.	..	..	..	Unforeseen works	..	..	60,000	60,000	
					Total ..	..	27,50,000	..	43,47,000	
					Suruliyár Valley.					
15	Preliminary expenses.	..	..	..	Preliminary expenditure	5,000	5,000	..		
16	Works ..	..	..	..	Regulating sluices, Uthamuth weir	20,000		..		
17					Paliamparva	25,400		..		
18					Ootampolliam	20,000		..		
19					Makinkota	25,400		..		
20					Coochinoor	25,400		..		
21					Saliamputty	19,620		..		
22					Kotabur	17,710		..		
23					Gulianur	25,400		..		
24					Oopperaputty	25,400		..		
25					Ooppercotta	25,400		..		
26					Veerapaudy	17,710		..		
27					Chattraputty	17,710		..		
28					Pulinchetty	25,400		..		
29					Fall of 8′ 2″ adjacent to the Paliamparva regulating sluice ..	20,470		..		
							3,11,020		..	
30	Maintenance ..	..	..	..	Maintenance of works during construction	13,980	13,980	..		
					Total, Suruliyár works ..	..	3,30,000	..	..	
					Total for No. I Periyár Division ..	..	30,80,000	..	43,47,000	
					No. II Periyár Division.					
					(2) Main Canals and Branches.					
1	Preliminary expenses.	..	..	..	Old outlay	15,000		15,000		
2					Temporary Survey establishment	..		274		Memorandum, No. 95-M., dated 10th October 1888—completed.
3					Do. do.	..		2,787		Quarterly return, dated 30th September 1889—completed.
4					Preliminary expenses for 3rd Reach	..		259		Quarterly return, dated 31st March 1890—completed.
5					Surveying and lockspitting, 4th and 5th Reaches	..		1,050		Do. do.
6					Do. do. 6th, 7th and 8th Reaches	..		2,447		No. 1058 I., dated 15th October 1892—completed.
7					Do. do. 9th, 10th, 11th and 12th Reaches ..	..		2,795		No. 35 I., dated 14th January 1893—completed.
8					Lump sum	3,000		56		
							18,000		24,708	
					Compensation for land.					
		Acres. Wet.	Acres. Dry.			Compensation. Wet. Rs.	Compensation. Dry. Rs.			
9	Land	73	13		I Reach	31,050	3,495	34,545	18,191	
10		..	..		II do.	..	..	5,710	6,988	
11		..	..		III do.	..	..	16,745	19,396	
12		23	3		IV do.	8,350	105	8,455	5,584	
13		19	51		V do.	8,550	2,425	10,975	9,501	
14		14	55		VI do.	9,900	2,305	12,205	3,837	
15		71	39		VII do.	3,850	1,465	5,315	2,209	No. 32 I., dated 14th January 1893.
16		18	25		VIII do.	6,600	875	7,475	1,038	
17		..	27		IX do.	..	810	810	725	
18		..	25		X do.	..	810	810	361	
19		32	43		XI do.	6,600	1,290	7,890	5,854	
20		9	18		XII do.	2,700	900	3,600	500	
								1,14,535	74,184	

Statement comparing the revised estimates for the works of the Periyár Project with the original estimates—*cont.*

No.	Sub-head.	Miles.	Furlongs.	Feet.	Name of work.	Estimate sanctioned in G.O., No. 356-I., dated 27th April 1883. Amount.	Estimate sanctioned in G.O., No. 356-I., dated 27th April 1883. Total.	Revised estimate. Amount.	Revised estimate. Total.	References.
					(2) Main Canals and Branches—*cont.*	Rs.	Rs.	Rs.	Rs.	
					I Reach.					
21	Regulators ..	..	..	..	Repairs to Peranay anicut	5,000		..		
22					Head-sluice to Peranay	71,700		27,353		No. 1058 I., dated 15th December 1892—completed.
23					Regulators	20,800		..		
24					Scouring sluice at Peranay	..		16,108		No. 1058 I., dated 15th December 1892—completed.
25					Head-sluice to Vadagarai channel	..		5,284		Do. do.
26					Store shed at Peranay	..		639		No. 591 I., dated 28th November 1889—completed.
27		1	..	180	Irrigation sluice at 1st Reach	..		750		No. 19 of 1893-94.
28		5	4	..	Do. do.	..	87,500	700	50,834	No. 58 of 1893-94.
					II Reach.			10,500		
29					Regulator	..				No. 373 I., dated 27th April 1891.
30					Widening shutter platform and providing iron railings to the regulator.	..		500		No. 391 I., dated 20th April 1892.
31		9	3	240	Sluice to supply Rungasamudram tank	..		1,190		No. 293 I., dated 21st March 1892.
					III Reach.					
32					Three sluices	5,310		..		
33					Sluice No. 1	..		1,172		No. 1058 I., dated 15th December 1892—completed.
34					Do. No. 2	..		1,155		Quarterly return, dated 31st March 1889—completed.
35					Do. No. 3	..		1,519		No. 1058 I., dated 15th December 1892—completed.
36		11	5	500	Sluice	..		1,650		No. 44 I., dated 15th January 1892.
					IV Reach.					
37					Sluice	1,770		1,388		No. 35 I., dated 14th January 1893—completed.
					VIII Reach.					
38		27	3	350	Regulator and bridge combined	..		8,150		No. 580 I., dated 2nd July 1892.
					IX Reach.					
39		28	4	240	Sluice	1,770		650		Quarterly return, dated 13th September 1892.
					X Reach.					
40		29	3	420	Sluice	1,770		650		Do. do.
					XI Reach.					
41					Sluice	1,770	1,09,890	1,150	80,508	Quarterly return, dated 31st March 1889.
42	Falls and Weirs.	2	4	..	I Reach. Fall and bridge	6,200		6,625		No. 939, dated 9th December 1891—completed.
					III Reach.			2,075		
43		10	1	320	Drop	..				No. 1058 I., dated 15th December 1892—completed.
					IV Reach.			592		
44		..	..	..	Weir for Koravangolam tank	..				No. 707 I., dated 23rd August 1892—completed.
45					Weir in the Koravangolam closing	..		158		No. 1058 I., dated 15th December 1882—completed.
					VI Reach.			3,929		
46					Weir at the west end of Vedakulam tank	..				No. 530 I., dated 13th June 1892—completed.
					VIII Reach.					
47		26	3	560	Outlet weir, Papakulam right bank	..		2,440		No. 934 I., dated 9th December 1891—completed.
48		26	7	500	Do. Papakulam left bank	..				
					XI Reach.					
49					Two falls	6,200		..		
50					Do.	5,480		..		
51					One fall	3,680		..		
52					Do.	630		1,780		No. 1019 I., dated 1st December 1892.
53		32	..	210	Outlet weir to Devimongalam tank	..		2,830		G.O., No. 570 I., dated 23rd June 1893.
54		34	..	400	Do. to Pudukulam tank	..		1,700		Do. do.
55		34	1	540	Number 2 outlet weir to Pudukulam tank	..		1,150		No. 711 I., dated 16th August 1893.
56		34	5	500	One fall	..				
					XII Reach.			1,000		
57					One fall	..	22,190		24,279	
					II Reach.			17,485		
58	Rivers and Hill Torrent works.	11	..	..	Aqueduct of 3 vents	..	..		17,485	No. 574 I., dated 30th June 1892—completed.
					I Reach.					
59	Other Cross Drainage works.	..	..	..	Five culverts	32,500		..		
60					Two aqueducts	7,800		..		
61					Surplus sluice for Ramarajapuram tank	34,000		34,543		Quarterly return, dated 31st March 1890—completed.
62					Surplus sluice for Nachikulam tank	16,100		..		
63			4	..	Culvert	..		9,310		No. 939 I., dated 9th December 1891—completed.
64		2	4	..	Do.	..		7,250		No. 413 I., dated 15th May 1891—completed.
65		2	4	..	Sheet-iron trough	..		1,000		Quarterly return, dated 30th June 1892—completed.
66		2	7	234	Aqueduct	..		5,441		No. 707 I., dated 22nd August 1892—completed.
67		3	1	470	Culvert	..		3,545		No. 1158 I., dated 15th December 1892—completed.

Statement comparing the revised estimates for the works of the Periyár Project with the original estimates—*cont.*

No.	Sub-head.	Miles.	Furlongs.	Feet.	Name of work.	Estimate sanctioned in G.O., No. 356-I., dated 27th April 1883. Amount.	Estimate sanctioned in G.O., No. 356-I., dated 27th April 1883. Total.	Revised estimate. Amount.	Revised estimate. Total.	References.
					(2) Main Canals and Branches—*cont.*	Rs.	Rs.	Rs.	Rs.	
68	Other Cross Drainage works —*cont.*	3	3	500	Aqueduct	..	..	4,858		No. 707 I., dated 22nd August 1892—completed.
								3,120		No. 939 I., dated 9th December 1891—completed.
70		5	4	..	Culvert	..		5,035		Do. do.
71					Culvert at Ramarajapuram	..				
					II Reach.					
					Culvert	6,500		..		
72					Inlet	4,100		..		
73					Do.	4,570		..		
74					Do.	4,160		..		
75					Outlet	8,280		..		
76					Do.	10,680		..		
77					Do.	3,000		5,070		No. 376 I., dated 12th April 1891—completed.
78		8	..	..	Culvert	..		19,874		No. 693 I., dated 5th September 1891—completed.
79		10	..	..	Aqueduct of 2 vents	..		3,440		No. 1058 I., dated 15th December 1892—completed.
80		10	..	..	Cross drainage works	..				
81					III Reach.					
					6 inlets	24,600		..		
82					6 outlets	49,680		..		
83					Inlet	6,200		..		
84					Outlet	17,300		..		
85					Superpassage	..		15,418		No. 590 I., dated 9th September 1892—completed.
86								24,852		No. 1058 I., dated 15th December 1892—completed.
87		11	..	..	Aqueduct of 3 vents	..		12,736		Do. do.
		13	..	..	Superpassage	..		15,747		No. 222 I., dated 5th March 1892—completed.
88		14	..	..	Do.	..		11,749		No. 1058 I., dated 15th December 1892—completed.
89		15	..	..	Do.	..		15,757		No. 961 I., dated 16th November 1892—completed.
90		15	4	589	Do.	..		14,253		No. 590 I., dated 9th July 1892—completed.
91		15	7	410	Do.	..		222		Quarterly return, dated 30th June 1892—completed.
92					Culvert at left approach 3rd Accommodation bridge	..				
93					IV Reach.					
					Inlet	4,100		..		
94					Outlet	8,280		..		
95		17	..	3	Culvert	..		6,767		No. 1058 I., dated 15th December 1892—completed.
96										
97		17	3	260	Sheet iron trough	..		1,033		Quarterly return, dated 30th June 1892—completed.
98		..	..	..	Do. (new one)	..		950		
99		..	..	..	V Reach.					
					Culvert and aqueduct combined in lieu of Shattiyar	22,650		..		
100		..	..	..	Do. do. of Marangaliyar	64,000		..		
101		..	..	..	Inverted syphon	6,690		..		
102		..	..	..	*Superpassage for Shattiyar crossing*	..		17,211		No. 1058 I., dated 15th December 1892—completed.
103		..	..	..	Do. for Marangaliyar	..		26,615		No. 121 I., dated 8th February 1893—completed.
104		18	6	..	Iron trough	..		853		
105		19	..	400	Do.	..		857		Quarterly return, dated 30th September 1892—completed.
106		19	..	279	Culvert	..		6,379		No. 487 I., dated 13th June 1891—completed.
107		19	6	489	Do.	..		3,458		No. 1058 I., dated 15th Dec. 1892—completed.
108					VI Reach					
109		..	..	..	2 inverted syphons	12,300		..		
110		..	..	..	Inlet	4,100		..		
111		..	..	..	2 outlets	16,560		..		
112		21	4	475	Syphon culvert	..		4,324		No. 706 I., dated 2nd Dec. 1890—completed.
113		21	7	322	Do.	..		4,941		No. 961 I., dated 16th Nov. 1892—completed.
114		21	7	500	Sheet iron trough	..		782		Quarterly return, dated 30th June 1892—completed.
115		23	7	400	Superpassage	..		8,890		No. 468 I., dated 3rd June 1891—completed.
116		24	1	110	Culvert	..		2,889		No. 730 I., dated 21st Sept. 1891—completed.
117		24	2	360	Sheet iron trough	..		1,011		Quarterly return, dated 31st December 1892—completed.
118		..	..	..	VIII Reach.					
119		..	..	..	Inlet	4,100		..		
		..	..	..	Outlet	8,280		..		
120		..	..	..	Diverting Vaguram odai to Kannimar odai	..		1,000		No. 760 I., dated 5th September 1892.
121		..	..	..	VII Reach.					
122		..	..	..	3 inlets	12,300		..		
		24	6	212	3 outlets	24,840		..		
123		25	4	70	Culvert	..		3,701		No. 748 I., dated 30th Sept. 1891—completed.
124		26	3	350	Superpassage	..		10,192		No. 577 I., dated 24th July 1891—completed.
125		..	..	..	Culvert	..		6,509		No. 538 I., dated 3rd July 1891—completed.
126		..	..	..	IX Reach.					
127		..	..	..	2 inlets	8,200		..		
		27	6	100	2 outlets	16,560		..		
128		28	2	560	Culvert	..		7,093		No. 706 I., dated 11th Sept. 1891—completed.
					Do.	..		5,546		Do. do.

Statement comparing the revised estimates for the works of the Periyar Project with the original estimates—*cont.*

No.	Sub-head.	Miles.	Furlongs.	Feet.	Name of work.	Estimate sanctioned in G.O., No. 356 I., dated 27th April 1893. Amount.	Estimate sanctioned in G.O., No. 356 I., dated 27th April 1893. Total.	Revised estimate. Amount.	Revised estimate. Total.	References.
					(2) Main Canals and Branches—*cont.*	Rs.		Rs.		
					X Reach.					
129	Other Cross	..	..	..	2 inlets	8,200		..		
130	Drainage	..	..	..	2 outlets	16,560		..		
131	works—*cont.*	28	7	300	Culvert	..		3,509		No. 705 I., dated 11th Sept. 1891—completed.
132		29	4	420	Do.	..		5,667		813 I., dated 23rd Oct. 1891—completed.
					XI Reach.					
133		..	..	..	4 inlets	16,800		..		
134		..	..	..	9 outlets	74,520		..		
135		30	3	570	Culvert	..		3,500		No. 814 I., dated 30th Sept. 1892.
136		31	..	240	Superpassage	..		3,850		No. 354 I., dated 21st April 1893.
137		32	5	410	Do.	..		4,000		No. 477 I., dated 31st May 1893.
138		33	3	..	Culvert	..		1,210		G.O., No. 484 I., dated 1st June 1893.
139		33	3	600	Do.	..		1,110		
140		33	4	320	Do.	..		1,320		
141		34	4	260	Outlet weir to Siruvalai tank	..		1,730		No. 400 I., dated 3rd May 1893.
142		35	2	400	Do. to Odayanenthal tank	..		3,050		G.O., No. 419 I., dated 8th May 1893.
143		..	..	..	3 iron troughs, 11 Reach	..		3,000		
					XII Reach.					
144		..	..	..	2 inlets	8,200		..		
145		..	..	..	2 outlets	16,560		..		
146		..	..	..	1 outlet weir	..	5,83,270	1,000	3,67,167	
					I Reach.					
147	Bridges ..	..	..	..	Bridge	5,700		..		
148		..	..	..	Do. for South Indian Railway	10,000		14,860		Quarterly return, dated 31st December 1889—completed.
149		1	4	803	Bridge	..		2,716		No. 1058 I., dated 15th December 1892—completed.
150		4	..	..	Accommodation bridge to replace the one built by the ryots	..		3,148		Quarterly return, dated 30th June 1889—completed.
151		7	..	..	Bridge	..		5,414		No. 939 I., dated 9th December 1891—completed.
					II Reach.					
152		..	..	..	Bridge	5,700		5,903		No. 376 I., dated 27th April 1891—completed.
153		..	..	..	Trunk road—repairs and alterations to masonry works	4,250		..		
154		..	..	..	Do. diversion	2,370		..		
		..								
					III Reach.					
155		..	..	..	3 bridges	10,500		..		
156		..	..	..	No. 1 accommodation bridge	..		3,290		No. 707 I., dated 22nd August 1892—completed.
157		..	..	..	,, 2 do.	..		3,385		No. 1058 I., dated 15th December 1892—completed.
158		..	..	..	,, 3 do.	..		3,957		Do. do.
					IV Reach.					
159		17	7	495	Bridge	..		3,100		No. 452 I., dated 11th May 1892.
					V Reach.					
160		..	..	..	Bridge	3,640		3,809		G.O., No. 1058 I., dated 15th December 1892—completed.
161		..	..	..	Do.	4,010		3,552		Do. do.
					VI Reach.					
162		..	..	..	Bridge	3,460		..		
163		20	6	300	Do.	..		2,100		Quarterly return, dated 30th June 1882.
164		21	5	460	Do.	..		2,600		No. 707 I., dated 2nd Dec. 1890—completed.
165		23	1	64	Do. near Velichinattam	..		3,394		No. 526 I., dated 11th June 1890—completed.
					VII Reach.					
166		..	..	..	Bridge	1,040		..		
167		..	..	..	Diversion of road	1,100		..		
168		24	7	480	Bridge	..		3,854		No. 400 I., dated 11th May. 1891—completed.
169		26	2	160	Bridge across cart-track from Thoplamputty to hills	..		3,140		No. 166 I., dated 19th Feb. 1892.
170		..	..	..	Culvert in the north approach to Nattam bridge	..		330		No. 390 I., dated 20th April 1892.
					VIII Reach.					
171		..	..	..	Bridge	3,670		..		
					X Reach.					
172		29	1	240	Bridge	..		2,000		Quarterly return, dated 30th Sept. 1892.
					XI Reach.					
173		..	..	..	Bridge	2,380		..		
174		30	1	..	Do.	..		2,160		Do. do.
175		32	3	580	Do.	..		1,450		No. 18 of 1893-94.
176		..	..	..	One bridge near Pulipatty tract	..		2,500		
177		..	..	..	Do. near Kunjatunni tank near Vellalapatti track	..		1,000		
					XII Reach.					
178		..	..	..	Bridge	2,380	60,200	..	77,662	
179	Buildings ..	..	..	..	Lump sum for buildings	10,000		..		
					I Reach.					
180		..	..	..	Lascar shed at Ramarajapuram			1,693		Quarterly return, dated 31st Mar. 1891—completed. Chargeable to F. C. D. works, Ramarajapuram.
181		..	..	..	Store-shed at Peranay, improving			98		No. 939 I., dated 9th Dec. 1891—completed. Chargeable to Peranay head works, D regulators.

Statement comparing the revised estimates for the works of the Periyar Project with the original estimates—*cont.*

No.	Sub-head.	Miles.	Furlongs.	Feet.	Name of work.	Estimate sanctioned in G.O., No. 356 I., dated 27th April 1883. Amount.	Estimate sanctioned. Total.	Revised estimate. Amount.	Revised estimate. Total	References.
					(2) Main Canals and Branches—*cont.*	Rs.		Rs.		
182	Buildings ..	..	..	..	Store-shed at Peranay, improving	..		1,206		Quarterly return, dated 30th Sept. 1892—completed. Chargeable to Peranay head works, D regulators.
183		..	..	..	Nachikulam shed, repairs	..		253		No. 1058 I., dated 15th Dec. 1892—completed. Chargeable to P. maintenance
184		..	..	..	Lascar shed No. 1 at Peranay	..		1,419		Quarterly return, dated 30th June 1890—completed. Chargeable to Peranay head works.
185		..	..	..	Lascar shed No. 2 at Peranay	..		1,417		Quarterly return, dated 31st Mar. 1892—completed. Chargeable to Peranay head works.
					III Reach.					
186		..	..	..	Rest-house at Andiputty	..		244		No. 939 I., dated 9th Dec. 1891—completed.
					V Reach.					
187		..	..	..	Rest-house with out-houses at Mettupatty	..		4,214		No. 1058 I., dated 15th Dec. 1892—completed.
188		..	..	..	Rest-house with out-houses at Mettupatty (maintenance) ..	..		86		No. 707 I., dated 22nd Aug. 1892—completed. Chargeable to P. maintenance.
					VIII Reach.					
189		..	..	..	Rest-house at Kallandry	..		2,232		No. 1058 I., dated 15th December 1892—completed.
					IX Reach.					
190		..	..	..	Shed at Mangalam	..		445		Quarterly return, dated 30th June 1892.
191		..	..	..	Rest-house for No. II Division near Nachikulam	..		2,708		Quarterly return, dated 31st March 1890—completed.
192		..	..	..	Stables and bath-rooms attached to Peranay store-shed	..		111		Quarterly return, dated 31st December 1889—completed. Chargeable to Peranay head works D. Regulators.
193		..	..	..	Providing roofing, doors and windows to the store-shed at Peranay.	..		674		No. 59 I., dated 19th January 1891—completed. Chargable to Peranay head works D. Regulators.
194		..	..	..	Do. do. to the rest-house at Nachikulam.	..		60		Quarterly return, dated 31st December 1889—completed.
195		..	..	..	Rest-house at Nachikulam.—Demolishing—	..		78		No. 939, dated 9th December 1891—completed. Chargeable to Peranay maintenance.
196		..	..	..	Thatched shed at Piranay	..		67		Quarterly return, dated 30th June 1891 — completed. Chargeable to Peranay maintenance
196-*a*		..	..	..	Constructing a rest-house at Andipatty in 3rd reach with out-houses.	..		2,480		
196-*b*		..	..	..	Construction cook-room and stable for rest-house at Kallandiry in the 8th reach.	..		1,115		
196-*c*		..	..	..	One new bungalow at Pulipatty, 11th reach	..		3,400		
196-*d*		..	..	..	Lascars' shed at regulator in the 2nd reach	..		1,650		
196-*e*		..	..	..	Do. for regulator in the 8th reach	..		1,650		
					I Reach.		10,000		27,352	
197	Earthwork ..	..	..	..	Earthwork	1,40,655		1,50,000		No. 106 I., dated 6th February 1891.
198		..	..	..	Embankment to left Vadagaras channel	..		260		No. 1058, dated 15th December 1892—completed.
199		..	..	..	Embanking Vadagarai channel left bank	..		498		Do. do.
					II Reach.					
200		..	..	..	Earthwork	34,680		53,541		No. 35 I., dated 14th January 1893—completed.
					III Reach.					
201		..	..	..	Earthwork	71,665		1,03,033		G.O., No. 379 I., dated 24th April 1891—completed.
202		..	..	..	Annual repairs to banks	..		195		No. 1058 I., dated 15th December 1892—completed.
					IV Reech.					
203		..	..	..	Earthword	8,395		24,992		Do. do.
					V Reach.					
204		..	..	..	Earthwork	29,035		30,300		No. 51 I., dated 23rd January 1888—completed.
					VI Reach.					
205		..	..	..	Earthwork	35,375		49,300		No. 209 I., dated 4th March 1893.
					VII Reach.					
206		..	..	..	Earthwork	22,405		22,405		No. 51 I., dated 23rd January 1888—completed.
					VIII Reach.					
207		..	..	..	Earthwork	9,475		14,500		No. 139 I., dated 14th February 1893.
					IX Reach.					
208		..	..	..	Earthwork	5,660		10,099		No. 227 I., dated 8th March 1892—completed.
					X Reach.					
209		..	..	..	Earthwork	3,660		4,200		No. 139 I., dated 14th February 1893.
					XI Reach.					
210		..	..	..	Earthwork	30,650		39,512		
					XII Reach.					
211		..	..	..	Earthwork	4,260		6,000		
							3,95,915		5,08,835	

Statement comparing the revised estimates for the works of the Periyar Project with the original estimates—*cont.*

No.	Sub-heads.	Miles.	Furlongs.	Feet.	Name of work.	Estimate sanctioned in G.O., No. 356 I., dated 27th April 1883. Amount.	Estimate sanctioned in G.O., No. 356 I., dated 27th April 1883. Total.	Revised estimate. Amount.	Revised estimate. Total.	References.
					(2) Main Canals and Branches—*cont.*	Rs.	Rs.	Rs.	Rs.	
212	Miscellaneous ..	..	..	..	Demarcating the line of main and branch channels from the beginning to the end and land required for Government buildings.	..		6,300		No. 820 I., dated 23rd October 1891.
					I Reach.					
213		..	..	..	Sluice at 5 feet 10 chains	..		293		No. 1058 I., dated 15th December 1892—completed.
214		12	3	150	luice	..		632		Do. do.
215		..	..	..	Do. at Valangulam channel	..		729		No. 59 I., dated 19th January 1891—completed.
216		..	..	..	Do. at Right Bank	..		572		Do. do.
217		..	..	..	Do. at do.	..		260		Do. do.
									8,786	
218	Maintenance ..	..	..	..	Maintenance of works during construction, lump sum	53,000		17,098		
					I Reach.					
219		2	7	..	Culvert No. 1 in Mattaparai fields. Repairs to—	..		164		Quarterly return, dated 30th June 1892—completed.
220		3	1	400	Do. ,, 2 do. do.	..		102		Do. do.
221		3	3	460	Do. ,, 3 do. do.	..		130		Do. do.
222		..	..	..	Culvert at 8 miles between Ramarajapuram and Nachikulam tanks.	..		84		Do, do.
223		..	..	..	Working shutters at Ramarajapuram surplus sluice	..		454		Do. do.
224		..	..	..	Do. do. do.	..		518		No. 4 of 1893-94.
225		..	..	..	Do. of head and scouring sluice and Vadagarai head-sluices at Peranay.	..		489		Quarterly return, dated 30th June 1892—completed.
226		..	..	..	Do. do. do.	..		518		No. 3 of 1893-94.
227		..	..	..	Breaches in banks of Mattaparai fields in 2nd, 3rd and 4th miles.—Closing	..		164		Quarterly return, dated 30th June 1892—completed.
228		..	..	..	First 2½ miles maintenance	..		500		Quarterly return, dated 30th September 1892.
229		3	3	..	Culvert maintenance	..		145		Do. do.
230		2	7	..	Do. do.	..		81		Quarterly return, dated 30th September 1892—completed.
231		..	..	..	Strengthening old wing of Peranay anicut and joining front wing.	..		86		Completed.
231-*a*		..	..	..	Gravelling Nachikulam tank bund, 1st reach	..		320		No. 2. of 1893-94.
232		3	1	..	Culvert maintenance	..		140		Quarterly return, dated 30th September 1892.
233		3	7	..	Do. do.	..		138		Do. do.
234		..	..	..	Providing tin covers to screw shafts to regulator, 1st reach	..		90		No. 122 of 1892-93—completed.
235		2	7	..	Repairing the culvert, 1st reach	..		170		No. 30 of 1893-94.
236		..	..	..	Raising banks to full height	..		2,000		
237		..	..	..	Cutting approaches to regulator at 7 miles 3 furlongs	..		700		
					II Reach.					
238		..	..	..	Main channel maintenance	..		1,455		Quarterly return, dated 31st March 1892—completed.
239		..	..	..	Raising banks to full height	..		709		Do. do.
240		..	..	..	Paving trough of No. 2 masonry work for cart-traffic	..		336		Do. do.
241		..	..	..	Training the drainage channels through No. 3 masonry dam	..		509		No. 961, dated 16th November 1892.
242		..	..	..	No. 2 cross drainage works, repairs	..		86		Quarterly return, dated 31st December 1892.
243		..	..	..	Removing silt in the bed of main channel	..		817		No. 316 of 7th April 1891.
244		..	..	..	Temporary lascars to work the screw shutters in regulator, 2nd reach, 7 miles 3 furlongs.	..		162		No. 51 of 1893-94.
245		..	..	..	Maintenance and repairs, masonry works, II reach	..		260		No. 131 of 1892-93.
246		..	..	..	Removing two barriers and making a road-way from Vadipatty to 2nd cross drainage work, 2nd reach.	..		610		No. 31 of 1893-94.
247		..	..	..	Repairing 2nd cross drainage works and its approaches at 8 miles 5 furlongs 485 feet.	..		290		No. 42 of 1893-94.
					III Reach.					
248		..	..	..	Maintaining main channel	..		370		Quarterly return, dated 30th September 1891—completed.
249		..	..	..	Do. rest-house, Andipatty	..		36		Quarterly return, dated 30th September 1892—completed.
250		..	..	..	Do. and repairing earthwork and masonry	..		708		Quarterly return, dated 30th June 1892—completed.
251		..	..	..	Forming dry stone apron to superpassage at No. 6 cross drainage work.	..		175		Quarterly return, dated 31st December 1892.
252		..	..	..	Clearing silt in do.	..		130		Quarterly return, dated 30th June 1892.
253		..	..	..	Clearing and widening diversion cut at No. 1 cross drainage	..		214		Quarterly return, dated 31st December 1892—completed.
254		..	..	..	Clearing silt in 5th cross drainage	..		485		No. 1 of 1893-94.
255		..	..	..	Extending dry stone apron to superpassage at 2nd cross drainage and 4th cross drainage works	..		218		Quarterly return, dated 31st December 1892—completed.
256		..	..	..	Straightening main channel at 17 miles	..		353		Do. do.
257		..	..	..	Maintaining III reach	..		392		Quarterly return, dated 30th September 1892—completed.
258		..	..	..	Do. masonry works	..		468		No. 1058 I., dated 15th December 1892—completed.
259		..	..	..	Closing breaches and maintenance and repairs to earthwork	..		1,353		Quarterly return, dated 31st December 1891—completed.
260		..	..	..	Andipatty rest-house.—Maintaining—	..		47		Quarterly return, dated 30th September 1891—completed.
261		..	..	..	Do. maintenance	..		70		No. 8 of 1893-94.
262		..	..	..	Strengthening weak portions, main channel banks, at 5th cross drainage works.	..		665		No. 124 of 1892-93.

Statement comparing the revised estimates for the works of the Periyar Project with the original estimates—*cont.*

No.	Sub-heads.	Miles.	Furlongs.	Feet.	Name of works.	Estimate sanctioned in G.O., No. 356 I., dated 27th April 1893. Amount.	Estimate sanctioned in G.O., No. 356 I., dated 27th April 1893. Total.	Revised estimate. Amount.	Revised estimate. Total.	References.
					(2) Main Canals and Branches—*cont.*					
					III Reach—*cont.*					
						Rs.		Rs.		
263	Maintenance—*cont.*	..	..	..	Strengthening banks of main channel near Thathakovundanpatty	..		260		No. 120 of 1892–93.
264		..	..	..	Maintaining main channel	..		372		No. 24 of 1893–94.
265		..	..	..	Closing gaps in right bank of main channel at nulla below 1st accommodation bridge.	..		370		No. 29 of 1893–94.
266		..	..	..	Raising and strengthening both banks of 3rd reach above 3rd cross drainage work.	..		600		No. 43 of 1893–94.
267		..	..	..	Raising and widening low portions of banks between 6th and 7th cross drainage works.	..		1,060		No. 44 of 1893–94.
268		..	..	..	Two bankers to look after 3rd reach	..		144		No. 147 of 1892–93.
269		..	..	..	Widening diversion cut leading to 6th cross drainage work at 15 miles 4 furlongs.	..		250		No. 53 of 1893–94.
270		..	..	..	Closing breaches and clearing silt in diversion cut leading to 4th, 5th cross drainage works, 3rd reach.	..		250		No. 57 of 1893–94.
					IV Reach.					
271		..	..	..	Maintaining main channel	..		149		Quarterly return, dated 30th September 1891—completed.
272		..	..	..	Do. do.	..		161		Quarterly return, dated 30th September 1892—completed.
273		..	..	..	Closing breaches and repairs	..		55		Quarterly return, dated 30th June 1892—completed.
274		..	..	..	Removing barriers in the channel	..		460		Quarterly return, dated 31st December 1892.
275		..	..	..	Rooting out sambai or bulrush	..		278		No. 118 of 1892–93—completed.
276		..	..	..	Cutting drainage channel to Kuravankolam fields to protect the eastern toe.	..		160		No. 121 of 1892–93.
277		..	..	..	Two bankers to look after 4th reach	..		144		No. 148 of 1892–93.
278		..	..	..	Clearing slush from culvert at 17 miles 3 furlongs and 321 feet ..	..		127		No. 62 of 1893–94.
279		..	..	..	Repairing banks, 4th reach	..		300		
					V Reach.					
280		..	..	..	Maintaining main channel	..		200		Quarterly return, dated 30th September 1891—completed.
281		..	..	..	Maintaining rest and store house at Mettupatty	..		46		Quarterly return, dated 30th September 1892—completed.
282		..	..	..	Maintaining rest-house at Mettupatty	..		86		No. 3 of 1891–92—completed.
283		..	..	..	Closing breaches and repairs	..		101		Quarterly return, dated 30th June 1892—completed.
284		..	..	..	Rooting out sambai or bulrush	..		399		No. 117 of 1892–93—completed.
285		..	..	..	Closing gaps and strengthening weak portions of banks in Marangaliyar valley.	..		143		Quarterly return, dated 31st December 1893—completed.
286		..	..	..	Maintaining 5th reach	..		177		Quarterly return, dated 30th September 1892—completed.
287		..	..	..	Widening nullah at superpassage, Marangaliyar	..		300		No. 119 of 1892–93—completed
288		..	..	..	Raising and strengthening low portions of 5th reach banks ..	..		1,450		No. 123 of 1892–93.
289		..	..	..	Groynes at superpassage and revetment to at Shattiyar ..	..		480		No. 132 of 1892–93.
290		..	..	..	Periodical repairs to rest-house, Mettupatty	..		323		No. 145 of 1892–93.
291		..	..	..	Repairing and deepening well attached to rest-house, Mettupatty.	..		126		No. 28 of 1893–94.
292		..	..	..	Revetment at low portions on the outside of left bank main channel.	..		100		No. 11 of 1893–94.
293		..	..	..	Clearing silt in the vents of culvert 19 miles 6 furlongs	..		75		No 63 of 1893–94.
294		..	..	..	Revetment to superpassage of Marangaliyar, 5th reach	..		650		No. 10 of 1893–94.
					VI Reach.					
295		..	..	..	Closing breaches and repairs	..		457		Quarterly return, dated 30th June 1892—completed.
296		..	..	..	Maintaining retaining wall to rear dry stone apron of superpassage at Kuthikal odai.	..		174		Quarterly return, dated 31st December 1892—completed.
297		..	..	..	Raising Poolampatty tank bund overlying main channel	..		150		No. 6 of 1893–94.
298		..	..	..	Closing breaches in Kuthikal odai	..		273		Quarterly return, dated 30th September 1892—completed.
299		..	..	..	Maintaining main channel	..		167		Quarterly return, dated 31st December 1892—completed.
300		..	..	..	Protection at the head of diversion cut and revetment to superpassage at Kuttikal odai.	..		333		No. 5 of 1893–94—completed.
301		..	..	..	Repairing both tanks, 6th reach	..		300		No. 16 of 1893–94.
302		..	..	..	Cutting a catch drain to divert a small nullah along the outer toe of left bank.	..		258		No. 32 of 1893–94.
					VII Reach.					
303		..	..	..	Shed at Chattrapatty	..		25		Quarterly return, dated 30th September 1892.
304		..	..	..	Closing breaches	..		146		Quarterly return, dated 30th September 1892—completed.
								473		Do. do.
305		..	..	..	Maintaining	..		1,520		No. 9 of 1893–94.
306		..	..	..	Do.	..		200		No. 70 of 1893–94.
307		..	..	..	Maintaining culvert sandi odai	..		100		No. 67 of 1893–94.
308		..	..	..	Maintaining superpassage, Alaganachi odai	..		150		No. 68 of 1893–94.
309		..	..	..	Do. Kannimar odai	..		170		No. 63 of 1893–94.
310		..	..	..	Revetting the rear slope of left bank from Nattam bridge to cocoanut tope (28·32 chains).	..				
					VIII Reach.					
311		..	..	..	Rest-house, Kallandry, maintaining	..		28		Quarterly return, dated 30th September 1892—completed.
312		..	..	..	Do. do.	..		26		Quarterly return, dated 31st December 1891—completed.
313		..	..	..	Do. do.	..		170		No. 27 of 1893–94.
314		..	..	..	Maintaining main channel, 8th reach	..		300		No. 20 of 1893–94.
315		..	..	..	Do. do.	..		15		No. 126 of 1892–93—completed.
					IX Reach.					
316		..	..	..	Maintaining main channel, 9th reach	..		550		No. 21 of 1893–94.
317		..	..	..	Do. culvert, Valayapattan odai	..		100		No. 71 of 1893–94.

Statement comparing the revised estimates for the works of the Periyár Project with the original estimates—*cont.*

No.	Sub-head.	Miles.	Furlongs.	Feet.	Name of work.	Estimate sanctioned in G.O., No. 356 I., dated 27th April 1883.		Revised estimate.		References.
						Amount.	Total.	Amount.	Total.	
					(2) Main Canals and Branches—*cont.*	Rs.	Rs.	Rs.	Rs.	
					IX Reach—cont.					
318	Maintenance—	..	..	..	Maintaining Periyanayini odai	..		150		No. 72 of 1893-94.
319	*cont.*	..	..	..	Shed at Mangolam	..		25		Quarterly return, dated 30th September 1892.
320		..	..	..	Maintenance and repairs to 9th reach	..		220		No. 127 of 1892-93—completed.
					X Reach.					
321		..	..	..	Maintenance and repairs to 10th Reach	..		360		No. 128 of 1892-93—completed.
322		..	..	..	Maintaining main channel 10th reach	..		600		No. 23 of 1893-94.
323		..	..	..	Do. culvert Vellalachi odai	..		212		No. 74 of 1893-94.
324		..	..	..	Do. Karungudi odai	..		250		No. 73 of 1893-94.
					XI Reach.					
325		..	..	..	Shed Kidaripatty maintenance	..		15		Quarterly return, dated 30th September 1892.
325-A		..	..	..	Watchman for rest-houses 3rd, 5th, 8th, 10th and 11th reaches ..	..		312	..	No. 14 of 1893-94.
					Total (2) Main Canals and Branches	..	53,000	..	53,034	
						..	13,67,000	..	12,64,000	
					III. Distributaries.					
326	Preliminary ..	..	..	..	Old outlay	7,665		7,665		
					II Branch Channel.					
327		..	..	..	Preliminary expenses	..		150		Quarterly return, dated 31st March 1890—completed.
					3rd Branch Channel.					
328		..	..	..	Preliminary expenses	..		134		No. 939 I., dated 9th January 1891—completed.
329		..	..	..	Do. 3, 4, 5 and 6 branch channels	..		1,142		No. 573 I., dated 24th July 1891—completed.
					5th Branch Channel.					
330		..	..	..	Surveying and lockspitting	..		313		Quarterly return, dated 31st December 1892—completed.
					6th Branch Channel.					
331		..	..	..	Surveying and lockspitting	..		92		Do. do.
332		..	..	..	Lump sum	2,335		..		
							10,000		9,496	
					Compensation for land.					
						Compensation.				
						Wet. ACS.	Dry. ACS.			
333										
334	Land	..	..	..	43 .. 1st branch channel ..	16,250	..	16,250		15,554		
335		..	..	..	.. 18 2nd do. do. ..	..	810	810		810		
336		..	..	..	.. 70 3rd do. do. ..	..	3,150	3,150		3,150		
337		..	..	..	.. 180 4th do. do. ..	..	8,100	8,100		8,100		
338		..	..	..	.. 55 5th do. do. ..	..	2,525	2,525		2,525		
339		..	..	..	.. 15 6th do. do. ..	..	525	525		1,221		
340		..	..	..	.. 20 7th do. do. ..	..	1,000	1,000		1,000		
341		..	..	..	.. 60 8th do. do. ..	..	2,900	2,900		2,900		
342		..	..	..	.. 290 9th do. do. ..	..	12,950	12,950		12,950		
343		..	..	..	5 295 10th do. do. ..	1,750	10,325	12,075		12,075		
344		..	..	..	.. 70 11th do. do. ..	..	3,150	3,150		3,150		
		..	..	..	.. 130 12th do. do. ..	..	5,850	5,850		5,850		
									69,285		69,285	
345					I Branch Channel.					
	Regulators ..	..	..	..	Head sluice			1,770		936		No. 59 I., dated 19th January 1891—completed.
346		..	..	..	Do.			1,770		1,114		No. 939 I., dated 9th December 1891—completed.
347					2nd Branch Channel.							
		..	..	..	Do.			1,770		2,260		No. 707 I., dated 28th August 1892—completed.
348					3rd Branch Channel.							
		..	..	..	Do.			1,770		1,624		No. 35 I., dated 14th January 1893—completed.
349		..	..	..	Do.			480		..		
350					4th Branch Channel.							
		..	..	..	Do.			2,500		1,864		No. 1058 I., dated 15th December 1892—completed.
351		..	..	..	Do.			1,770		1,431		Quarterly return, dated 31st December 1890—completed.
352												
353		..	..	..	5 regulators			2,400		..		
354		..	..	..	3 do.			..		..		
355		1	5	470	No. 1 regulator for Thandalay tank			..		448		Quarterly return, dated 31st December 1891—completed.
		..	..	..	No 4 regulator for Thandalay tank at the offtake of the minor distributary from Thandalay.			..		243		Quarterly return, dated 31st March 1892—completed.
356					5th Branch Channel.							
		..	..	..	Head sluice			1,770		1,071		No. 1058 I., dated 15th December 1891—completed.
357		..	..	..	Regulator			480		480		
					6th Branch Channel.							Quarterly return, dated 13th September 1891.
358		..	..	..	Head sluice			1,770		1,100		
					7th Branch Channel.							
..		..	..	..	Do.			..		..		
359		26	2	310	Head sluice			1,770		1,100		Quarterly return, dated 31st March 1891.

Statement comparing the revised estimates for the works of the Periyár Project with the original estimates—*cont.*

No.	Sub-head.	Miles.	Furlongs.	Feet.	Name of work.	Estimate sanctioned in G.O., No. 356 I., dated 27th April 1883. Amount.	Estimate sanctioned in G.O., No. 356 I., dated 27th April 1883. Total.	Revised estimate. Amount.	Revised estimate. Total.	References.
					(3) Distributaries.					
					8th Branch Channel.	Rs.	Rs.	Rs.	Rs.	
360	Regulators—*cont.*	..	..	..	Head sluice	1,770		1,100		Quarterly return, dated 31st December 1891.
361		..	..	..	2 Regulators	960		960		
					9th Branch Channel.					
362		..	..	..	Head sluice	2,500		..		
363		..	..	..	Do.	1,770		..		
364		..	..	..	5 regulators	2,400		1,920		
365		28	7	100	Head sluice	..		2,440		G.O., No. 52 I., dated 16th January 1892.
366		2	..	40	Regulator and drop combined to Chittampatti offtake	..		540		Quarterly return, dated 30th September 1892.
367		4	3	100	Do. do. to Kunnathore offtake	..		590		Do. do.
					10th Branch Channel.					
368		..	..	..	Head sluice	2,500		..		
369		..	..	..	Do.	1,770		1,150		Quarterly return, dated 31st March 1889.
370		..	..	..	Do.	840		840		
371		..	..	..	3 Regulators	1,440		1,440		
372		30	..	320	Head sluice	..		2,430		Quarterly return, dated 31st March 1892.
					11th Branch Channel.					
373		..	..	..	Do.	1,770		1,050		Quarterly return, dated 31st March 1889.
374		..	..	..	Regulator	480		480		
					12th Branch Channel.					
375		..	..	..	Head sluice	2,500		2,500		
376		..	..	..	3 Regulators	1,440	42,160	1,440	32,551	
					1st Branch Channel.					
377	Falls and Weirs.	..	..	..	5 Falls	3,600		..		
378		..	..	..	3 do.	2,220		..		
379		..	..	..	No. 1 fall and sluice combined	..		931		Quarterly return, dated 30th June 1890—completed.
380		..	..	..	No. 2 do. do.	..		671		Do. do.
381		..	..	..	No. 3 do. do.	..		912		Do. do
382		..	..	..	No. 4 do. do.	..		809		No. 939 I., dated 9th Dec. 1891—completed.
383		..	..	..	No. 5 do. do.	..		819		Do. do.
384		..	..	..	No. 6 do. do.	..		832		No. 939 I., dated 9th Dec. 1891—completed.
385		..	..	..	No. 7 do. do.	..		834		Do. do.
386		..	..	..	Lump sum	..		388		
					2nd Branch Channel.					
387		..	..	..	Fall	670		..		
388		..	..	..	2 falls	1,280		..		
389		..	3	62	Fall and sluice combined	..		992		No. 939 I., dated 9th Dec. 1891—completed.
390		1	3	14	Do. do.	..		1,013		No. 1058 I., dated 15th Dec. 1892—completed.
391		..	..	..	Fall	..		640		
					3rd Branch Channel.					
392		..	..	..	3 falls	2,310		..		
393		..	..	..	2 do.	1,520		..		
394		..	..	..	2 do.	1,440		1,440		
395		..	..	..	1 do.	710		980		No 707 I., dated 22nd August 1892—completed.
396		..	..	..	1 do.	710		1,092		Completed.
397		..	..	..	3 falls	2,010		..		
398		..	..	..	No. 1 fall and sluice combined	..		1,147		No. 1058 I., dated 15th Dec. 1892—completed.
399		..	..	..	No. 2 do. do.	..		660		Do. do.
400		..	..	..	No. 3 do. do.	..		994		No. 961 I., dated 16th Nov. 1892—completed.
401		..	..	..	Fall	..		827		No. 707 I., dated 22nd August 1892—completed.
402		..	..	..	Do.	..		827		Do. do.
403		..	..	..	Do.	..		744		
404		..	..	..	7th fall and sluice combined	..		1,098		No. 961 I., dated 16th Nov. 1892—completed.
					4th Branch Channel.					
405		..	..	..	2 falls	3,440		..		
406		..	..	..	Fall	1,710		..		
407		..	..	..	3 falls	2,190		..		
408		..	..	..	2 do.	1,400		..		
409		..	..	..	2 do.	1,340		..		
410		..	..	..	2 do.	1,280		..		
411		..	..	..	2 do.	1,780		..		
412		..	..	..	2 do.	1,740		..		
413		..	..	..	2 do.	1,6[illegible]0		..		
414		..	..	..	3 do.	2,250		..		
415		..	2	444	Fall with 2 sluices combined	..		1,072		Quarterly return, dated 31st March 1892—completed.
416		..	5	9	No. 2 fall in Thandalay branch	..		673		Do. do.
417		..	7	463	Fall	..		1,010		Quarterly return, dated 31st December 1891—completed.
418		..	7	589	No. 3 fall and road tunnel combined in the Thandalay branch	..		944		Quarterly return, dated 31st March 1892—completed.

Statement comparing the revised estimates for the works of the Periyár Project with the original estimates—*cont.*

No.	Sub-head.	Miles.	Furlongs.	Feet.	Name of work.	Estimate sanctioned in G.O., No. 356-I., dated 27th April 1883. Amount.	Estimate sanctioned in G.O., No. 356-I., dated 27th April 1883. Total.	Revised estimate. Amount.	Revised estimate. Total.	References.
					(3) Distributaries—*cont.*	Rs.		Rs.		
					4th Branch Channel—*cont.*					
419	Falls and Weirs —*cont.*	1	2	488	Fall	..		947		Quarterly return, dated 31st March 1892—completed.
420		1	7	207	Fall and weirs combined	..		1,105		Quarterly return, dated 31st December 1891—completed.
421		1	7	609	Do. do.	..		921		Quarterly return, dated 31st March 1892—completed.
422		2	2	117	No. 5 fall	..		877		Quarterly return, dated 31st December 1891—completed.
423		2	3	539	Fall	..		314		Quarterly return, dated 31st March 1892—completed.
424		2	5	437	No. 6 fall	..		779		No. 1058 I., dated 15th December 1892—completed.
425		2	5	519	Fall and 2 sluices combined	..		678		Quarterly return, dated 30th June 1892—completed.
426		3	..	557	No. 7 fall with 2 sluices	..		988		Quarterly return, dated 31st March 1892—completed.
427		3	3	570	No. 8 fall	..		932		No. 1058 I., dated 15th December 1892—completed.
428		4	3	500	Fall and sluices combined	..		744		Quarterly return, dated 31st March 1892—completed.
429		4	4	432	No. 10 fall with 2 sluices combined	..		984		Quarterly return, dated 31st December 1891—completed.
430		4	7	360	No. 9 fall and sluices combined	..		723		Quarterly return, dated 31st March 1892—completed.
431		..	4	560	No. 1 fall with 2 sluices in the minor distributary, Thandalay branch.	..		610		No. 81 of 1893-94.
432		..	5	300	No. 2 fall with 2 sluices in the minor distributary, Thandalay branch.	..		380		No. 82 of 1893-94.
433		..	6	400	No. 3 fall with 2 sluices in the minor distributary, Thandalay branch.	..		460		No. 83 of 1893-94.
434		1	2	200	No. 4 fall with 2 sluices in the minor distributary, Thandalay branch.	..		610		No. 84 of 1893-94.
435		1	3	540	No. 5 fall with 2 sluices in the minor distributary, Thandalay branch.	..		360		No. 85 of 1893-94.
436		..	..	..	2 falls	..		1,280		
437		..	..	..	1 fall	..		870		
438		..	..	..	1 do.	..		750		
					5th Branch Channel.					
439		..	..	..	5 falls	3,500		..		
440		..	..	..	3 do.	2,010		2,010		
441		..	..	..	4 do.	2,560		2,560		
442		..	..	..	2 do.	1,220		1,220		
443		..	..	..	Two do.	1,180		1,180		
444		..	..	350	Fall No. 1 (aqueduct and sluice combined)	..		799		Quarterly return, dated 31st March 1892—completed.
445		..	1	90	Do. ,, 2	..		284		Do. do.
446		..	1	440	Do. ,, 3	..		478		Do. do.
447		..	..	..	Sluice in Achampatti tank combined with Fall No. 4	..		350		No. 41 of 1893-94.
448		1	1	10	No. 5 Fall	..		560		No. 7 of 1893-94.
					6th Branch Channel.					
449		..	..	..	Three falls	1,980		..		
450		..	..	..	Fall	650		..		
451		..	..	..	Two falls	1,280		1,280		
452		..	..	..	Fall	630		630		
453		..	..	..	Two falls	1,200		1,200		
454		..	..	600	Fall and sluice combined	..		580		Quarterly return, dated 31st March 1892.
455		..	4	160	No. 2 fall	..		340		Do. do.
456		..	6	340	,, 3 do.	..		340		Do. do.
457		..	7	380	,, 4 do.	..		280		Do. do.
					7th Branch Channel.					
458		..	..	..	Five falls	2,850		2,850		
459		..	..	..	Three do.	1,740		1,740		
					8th Branch Channel.					
460		..	..	..	Five falls	3,400		3,400		
461		..	..	..	Four do.	2,520		2,520		
462		..	..	..	Three do.	1,830		1,830		
					9th Branch Channel.					
463		..	..	..	Five falls	10,350		..		
464		..	..	..	Four do.	4,120		..		
465		..	..	..	Do. do.	3,440		..		
466		..	..	..	Fall	770		..		
467		..	..	..	Five falls	3,750		..		
468		..	..	..	Two do.	1,440		..		
469		..	..	..	Do. do.	1,400		..		
470		..	..	..	Three do.	2,040		1,020		
471		..	..	..	Eight do.	5,360		5,360		
472		..	..	..	Fall	650		650		
473		..	..	..	Four falls	2,560		2,560		
474		..	..	..	Five do.	3,050		3,050		
475		..	1	440	Fall No. 1	..		1,860		Quarterly return, dated 30th June 1892.
476		..	2	180	Do. ,, 2	..		1,320		Do. do.
477		..	3	120	Do. ,, 3	..		1,360		Do. do.
478		..	4	560	Do. ,, 4	..		1,340		Do. do.
479		1	..	42	Do. ,, 5	..		1,930		No. 76 of 1893-94.
480		1	1	560	Do. ,, 6	..		1,000		Quarterly return, dated 30th June 1892.
481		1	2	600	Do. ,, 7	..		950		Do. do.
482		2	1	80	Do. ,, 8	..		1,375		No. 55 of 1893-94.
483		5	2	418	Do. ,, 9	..		690		Quarterly return, dated 30th September 1892.

Statement comparing the revised estimates for the works of the Periyár Project with the original estimates—*cont.*

No.	Sub-heads.	Miles.	Furlongs.	Feet.	Name of work.	Estimate sanctioned in G.O., No. 356 I., 27th April 1883. Amount.	Estimate sanctioned in G.O., No. 356 I., 27th April 1883. Total.	Revised estimate. Amount.	Revised estimate. Total.	References.
					(3) Distributaries—*cont.*	Rs.	Rs.	Rs.	Rs.	
					9th Branch Channel—*cont.*					
484	Falls and Weirs	5	3	120	Fall No. 10 and superpassage	..		1,750		No. 49 of 1893-94.
485	—*cont.*	5	3	580	Do. ,, 11	..		720		No. 77 of 1892-93.
486		5	5	238	Do. ,, 12	..		715		Quarterly return, dated 30th September 1892.
487		5	6	178	Do. ,, 13	..		720		Do. do.
488		7	..	395	Do. ,, 14	..		1,200		Do. do.
489		8	..	315	Do. ,, 15	..		1,200		No. 89 of 1893-94.
490		..	..	..	Do. ,, 15	..		860		
491		} ..	..	..	No. 1 Fall and 2 sluices to Chittampatti offtake	..		750		No. 47 of 1893-94.
492										
493		..	1	540	,, 2 do. do. do.	..		500		No. 50 of 1893-94.
494		2	5	..	,, 3 do. do. do.	..		600		No. 52 of 1893-94.
495		..	3	260	,, 1 do. in Kunnathoor do.	..		610		No. 54 of 1893-94.
496		..	4	60	,, 2 Fall	..		500		No. 56 of 1893-94.
497		..	4	360	,, 3 do.	..		780		No. 59 of 1893-94.
498		..	5	350	,, 4 do.	..		640		No. 64 of 1893-94.
499		..	6	340	,, 5 do.	..		640		No. 65 of 1893-94.
					10th Branch Channel.					
500		..	..	..	Seven falls	13,860		..		
501		..	..	..	Two falls	3,940		3,940		
502		..	..	..	Fall	1,960		1,960		
503		..	..	..	Two falls	3,040		3,040		
504		..	..	..	Do.	1,740		1,740		
505		..	..	..	Fall	1,620		1,620		
506		..	..	..	Do.	800		800		
507		..	..	..	Two falls	1,560		1,560		
508		..	..	..	Three do.	2,280		2,280		
509		..	..	..	Four do.	3,000		3,000		
510		..	..	..	Two do.	1,260		1,260		
511		..	..	..	Do. do.	1,200		1,200		
512		..	1	340	No. 1 Fall with 2 sluices	..		1,200		No. 134 of 1892-93.
513		..	2	180	,, 2 do.	..		870		No. 137 of 1892-93.
514		..	2	580	,, 3 do.	..		1,040		No. 142 of 1892-93.
515		..	4	260	,, 4 do.	..		1,040		No. 143 of 1892-93.
516		..	5	300	,, 5 do.	..		1,040		No. 144 of 1892-93.
					11th Branch Channel.					
517		..	..	..	Fall	800		800		
518		..	..	..	Four falls	3,120		3,120		
519		..	..	..	Fall	760		760		
520		..	..	..	Four falls	..		3,000		
					12th Branch Channel.					
521		..	..	..	Fall	2,040		2,040		
522		..	..	..	4 falls	..	1,45,660	3,200	1,41,252	
					1st Branch Channel.	5,480		..		
523	Other cross drainage works.	..	..	..	2 culverts	..		1,220		No. 150 of 1892-93.
524		..	..	..	Superpassage below Sholavandan tank	..		1,000		Quarterly return, dated 30th December 1892.
525		1	..	32	No. 1 culvert do. do.	..		1,400		No. 142 of 1892-93.
526		..	..	..	Aqueduct do. do.	..				
					2nd Branch Channel.					
527		..	..	..	Culvert	2,740		752		No. 1058 I., dated 15th December 1892—completed.
528		..	..	..	Culvert at left approach of road bridge at 4 furlongs and 460 feet.	..		200		No. 79 of 1893-94.
					3rd Branch Channel.					
529		..	..	..	Culvert	2,740		..		
530		1	3	50	Superpassage	..		1,003		Quarterly return, dated 30th June 1892—completed.
					5th Branch Channel.					
531		..	..	..	2 wrought-iron acqueducts	1,500		..		
					9th Branch Channel.					
532		..	..	..	6 culverts	16,440		..		
533		4	7	310	Superpassage	..		1,700		No. 48 of 1893-94.
534		6	1	..	Culvert	..		1,050		
535		6	3	180	Do.	..		1,050		
536		..	..	..	1 superpassage	..		1,200		
					10th Branch Channel.					
537		..	..	..	19 culverts	52,060	80,960	52,060	62,635	
					1st Branch Channel.					
538	Bridges ..	1	5	520	Road tunnel	..		400		No. 141 of 1892-93.
					2nd Branch Channel.					
539		..	..	..	Road tunnel	960		415		No. 578 I., dated 24th July 1891—completed.
540		..	4	460	Do.	..		230		No. 80 of 1893-94.
					3rd Branch Channel.					
541		..	..	..	Road tunnel	..		615		No. 1058 I., dated 15th December 1892—completed.
					4th Branch Channel.					
542		..	..	..	3 road tunnel	2,370		..		
543		..	..	..	Road tunnel and fall	..		2,931		No. 133 I., dated 11th February 1893—completed.
544		1	4	360	Slab drain crossing Nattam road	..		281		Quarterly return, dated 31st December 1891—completed.

Statement comparing the revised estimates for the works of the Periyár Project with the original estimates—*cont.*

No.	Sub-head.	Miles.	Furlongs.	Feet.	Name of work.	Estimate sanctioned in G.O., No. 356 I., dated 27th April 1883.		Revised estimate.		References.
						Amount.	Total.	Amount.	Total.	
					(3) Distributaries—*cont.*	Rs.	Rs.	Rs.	Rs.	
					1st Branch Channel.					
545	Bridges—*cont.*	5	4	360	Road tunnel	..		445		Quarterly return, dated 30th September 1892.
										Do. do.
546		2	1	277	Do.	..		360		No. 133 of 1892-93.
547		..	..	350	Road tunnel from the head of Thandalay offtake	..		590		No. 86 of 1893-94.
548		..	6	440	Road culvert in minor distributary, Thandalay	..		240		
					5th Branch Channel.					
549		..	5	450	Bridge	..		330		Quarterly return, dated 30th September 1892.
550		..	..	..	Do.	790		..		
					6th Branch Channel.					
551		..	..	..	Slab drain crossing Nattam road	..		280		No. 51 of 1891-92.
					9th Branch Channel.					
552		..	..	..	Two road tunnels	2,540		1,270		
553		7	4	93	Road culvert	..		740		Quarterly return, dated 31st December 1892.
554		..	..	..	Do. tunnel	960		..		
555		2	4	..	Do. culvert at Chittampatti offtake	..		530		No. 138 of 1892-93.
556		..	..	..	Do. culvert at Kunnathoor offtake	..		600		
					10th Branch Channel.					
557		..	..	..	Road tunnel	1,270		1,270		
					11th Branch Channel.					
558		..	..	..	Road tunnel	960		960		
					12th Branch Channel.					
559		..	..	..	Road tunnel	1,270		1,270		
560		..	..	..	Do.	960		960		
561		..	..	..	Do.	790		790		
					1st Branch Channel, &c.		12,870		15,507	
562	Buildings ..	..	..	..	Lump sum	5,000		1,600		
562A		..	..	..	New building at Chittampatti in 9th Branch channel	..		3,040		
					1st Branch Channel, &c.		5,000		5,000	
563	Earthwcrk ..	..	..	..	Earthwork	13,530		6,038		No. 939 I., dated 9th December 1891—completed.
					2nd Branch Channel.					
564		..	..	..	Earthwork	5,500		4,435		No. 1058 I., dated 15th December 1892—completed.

					3rd Branch Channel.					
565		..	..	..	Earthwork	9,240		8,335		
					4th Branch Channel.					
566		..	..	..	Earthwork	37,750		37,750		
					5th Branch Channel.					
567		..	..	..	Earthwork	10,665		10,565		
					6th Branch Channel.					
568		..	..	..	Earthwork	6,745		6,745		
					7th Branch Channel.					
569		..	..	..	Earthwork	1,460		1,460		
					8th Branch Channel.					
570		..	..	..	Earthwork	7,090		7,090		
					9th Branch Channel.					
571		..	..	..	Earthwork	56,640		56,640		
					10th Branch Channel.					
572		..	..	..	Earthwork	66,225		66,225		
					11th Branch Channel.					
573		..	..	..	Earthwork	13,150		13,150		
					12th Branch Channel.					
574		..	..	..	Earthwork	54,220		54,220		
							2,82,215		2,72,753	
					1st Branch Channel.					
575	Miscellaneous ..	..	..	..	2 sluices	660		..		
576		..	..	..	3 do.	960		..		
577		..	..	..	3 do.	930		..		
578		..	..	..	2 do.	600		..		
					3rd Branch Channel.					
579		..	..	..	5 sluices	1,650		..		
580		..	..	..	3 do.	..		990		
581		..	..	..	4 do.	1,280		1,280		
582		..	..	..	3 do.	620		620		
583		..	..	..	2 do.	600		600		
					2nd Branch Channel.					
584		..	..	..	3 sluices	960		..		
585		..	..	..	Sluices	310		..		
					4th Branch Channel.					
586		..	..	..	14 sluices	4,620		4,620		
587		..	..	..	6 do.	1,920		1,920		
588		..	..	..	4 do.	1,240		1,240		
589		..	..	..	2 do.	600		600		
590		..	..	..	2 do.	..		450		No. 133 I., dated 11th February 1893.

Statement comparing the revised estimates for the works of the Periyár Project with the original estimates—*cont.*

No.	Sub-head.	Miles.	Furlongs.	Feet.	Name of work.	Estimate sanctioned in G.O., No. 356-I., dated 27th April 1893. Amount.	Estimate sanctioned in G.O., No. 356-I., dated 27th April 1893. Total.	Revised estimate. Amount.	Revised estimate. Total.	Reference.
					(3) Distributaries—*cont.*	Rs.	Rs.	Rs.	Rs.	
					4th Branch Channel—*cont.*					
591	Miscellaneous —*cont.*	..	..	..	4 sluices	..		1,320		
592		..	..	..	2 do.	..		640		
593		..	..	..	2 do.	..		267		Completed.
					5th Branch Channel.					
594		..	..	..	4 sluices	1,320		1,320		
595		..	..	..	3 do.	960		960		
596		..	..	..	Sluice	310		310		
597		..	..	..	2 sluices	..		660		
					6th Branch Channel.					
598		..	..	..	2 sluices	660		660		
599		..	..	..	3 do.	960		960		
600		..	..	..	Sluice	310		310		
					7th Branch Channel.					
601		..	..	..	2 sluices	660		660		
602		..	..	..	2 sluices	620		620		
					8th Branch Channel.					
603		..	..	..	3 sluices	990		990		
604		..	..	..	Sluices	320		320		
605		..	..	..	Do.	620		620		
					9th Branch Channel.					
606		..	..	..	6 sluices	2,640		..		
607		..	..	..	18 sluices	5,940		..		
608		..	..	..	13 do.	4,160		4,160		
609		..	..	..	3 do.	930		930		
610		..	..	..	4 do.	1,200		1,200		
611		..	..	..	2 do.	..		880		Quarterly return, dated 30th June 1892.
612		..	..	..	11 do.	..		3,630		
613		3	..	..	Sluice	..		300		Quarterly return, dated 30th September 1892.
614		4	..	..	Do.	..		440		Do. do.
615		4	2	..	Do.	..		320		Do. do.
616		5	..	..	Do.	..		360		Do. do.
617		6	..	..	Do.	..		340		Quarterly return, dated 31st December 1892.
618					2 sluices	..		880		
					10th Branch Channel.					
619		..	..	..	8 sluices	3,520		3,520		
620		..	..	..	9 do.	2,970		2,970		
621		..	..	..	11 do.	3,520		3,520		
622		..	..	..	5 do.	1,550		1,550		
					11th Branch Channel.					
623		..	..	..	10 sluices	3,200		3,200		
624		..	..	..	Sluice	310		310		
625		..	..	..	Do.	300		300		
					12th Branch Channel.					
626		..	..	..	2 sluices	880		880		
627		..	..	..	16 do.	5,280		5,280		
628		..	..	..	5 do.	1,600		1,600		
629		..	..	..	7 do.	2,170		2,170		
630	Maintenance ..	..	..	..	Lump sum	40,000	64,850	37,736	61,677	
					2nd Branch Channel.					
631		..	..	..	Maintaining	..		75		Quarterly return, dated 31st December 1892.
					3rd Branch Channel.					
632		..	..	..	Maintaining	..		138		Quarterly return, dated 30th September 1891—completed.
633		..	..	..	Do.	..		144		Quarterly return, dated 30th September 1892.
634		..	..	..	Do.	..		200		No. 120 of 1893–94.
635		..	..	..	Excavating catch drain from superpassage 1 mile 4 furlongs to 2 miles 4 furlongs and closing breaches.	..		430		No. 40 of 1893–94.
					4th Branch Channel.					
636		..	..	..	Maintaining	..		320		No. 707 I., dated 22nd August 1891—completed.
637		..	..	..	Do.	..		397		Quarterly return, dated 31st December 1892—completed.
638		..	..	..	Do.	..		465		No. 25 of 1893–94.
					5th Branch Channel.					
639		..	..	..	Maintaining	..		95		No. 33 of 1893–94.
640		..	..	..	Unforeseen works	..	40,000	..	40,000	
					Total (3) Distributaries	..	7,53,000	..	7,15,000	
					Total (2) Main canals and branches	..	13,67,000	..	12,64,000	
					Total for No. II Periyár Division	..	21,20,000	..	19,79,000	
					Grand Total	..	53,00,000	..	63,26,000	

MADURA DISTRICT.

49. CAPITAL EXPENDITURE NOT CHARGED TO REVENUE.

Periyar Project.

TABLE I.—Summary of actual and estimated direct charges on Capital Account.

Year.	Works.			Establishment.	Tools and Plant.	Total.	Less receipts on Capital Account.	Net total.
	Land compensation.	Other works.	Total.					
1	2	3	4	5	6	7	8	9
	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.
Actuals to end of 1892–93 ..	92,850	35,76,533	36,69,383	8,01,936	6,18,155	50,89,474	7,333	50,82,141
Probable during 1893–94 ..	20,000	10,23,496	10,43,496	2,35,404	66,617	13,45,517	2,000	13,43,517
Estimate for 1894–95 ..	20,641	7,82,269	8,02,910	1,79,922	63,668	10,46,500	1,500	10,45,000
1895–96 ..	9,978	5,81,270	5,91,248	1,33,692	6,560	7,31,500	1,500	7,30,000
1896–97 ..	..	2,18,963	2,18,963	50,046	2,000	2,71,009	667	2,70,342
Total ..	1,43,469	61,82,531	63,26,000	14,01,000	7,57,000	84,84,000	13,000	84,71,000

TABLE II.—Summary of actual and estimated indirect charges on Capital Account.

Year.	Capitalized abatement of land revenue.	Leave and pension allowances.	Total.
	RS.	RS.	RS.
Actuals to end of .. 1892–93 ..	19,055	1,12,272	1,31,327
Probable during .. 1893–94 ..	25,000	33,000	58,000
Estimate for : 1894–95 ..	26,000	25,000	51,000
1895–96 ..	12,445	19,000	31,445
1896–97 .	..	7,228	7,228
Total ..	82,500	1,96,500	2,79,000

TABLE III.—Summary of growth of Irrigation and Revenue receipts and charges.

—	Area irrigated at the end of each year.		Estimate of revenue receipts and charges.					
			Gross revenue.			Working expenses both direct and indirect.	Net revenue due to works.	
	First crop.	Second crop.	Direct.	Indirect.	Total.		Including indirect revenue.	Excluding indirect revenue.
1	2	3	4	5	6	7	8	9
	ACRES.	ACRES.	RS.	RS.	RS.	RS.	RS.	
1896–97 ..	11,468	7,794	..	72,179	72,179	61,498	10,681	As all water rates are collected in the Revenue Department, they are shown under indirect revenue; if they are excluded, there is no net revenue.
1897–98 ..	22,918	15,585	..	1,44,237	1,44,237	82,101	62,136	
1898–99 ..	34,368	23,376	..	2,16,295	2,16,295	1,02,704	1,13,591	
1899–900 ..	45,818	31,167	..	2,88,353	2,88,353	1,23,307	1,65,046	
1900–01 ..	57,268	38,958	..	3,60,410	3,60,410	1,43,909	2,16,501	
1901–02 ..	68,718	46,749	..	4,32,468	4,32,468	1,47,512	2,84,956	
1902–03 ..	80,168	54,540	..	5,04,526	5,04,526	1,51,115	3,53,411	
1903–04 ..	91,618	62,331	..	5,76,584	5,76,584	1,54,718	4,21,866	
1904–05 ..	103,068	70,122	..	6,48,642	6,48,642	1,58,321	4,90,321	
1905–06 ..	114,518	77,913	..	7,20,700	7,20,700	1,61,924	5,58,776	
Estimate for 1906–07 ..	114,518	77,913	..	7,20,700	7,20,700	1,61,924	5,58,776	
1907–08 ..	114,518	77,913	..	7,20,700	7,20,700	1,61,924	5,58,776	
1908–09 ..	114,518	77,913	..	7,20,700	7,20,700	1,61,924	5,58,776	
1909–10 ..	114,518	77,913	..	7,20,700	7,20,700	1,61,924	5,58,776	
1910–11 ..	114,518	77,913	..	7,20,700	7,20,700	1,61,924	5,58,776	
1911–12 ..	114,518	77,913	..	7,20,700	7,20,700	1,61,924	5,58,776	
1912–13 ..	114,518	77,913	..	7,20,700	7,20,700	1,61,924	5,58,776	
1913–14 ..	114,518	77,913	..	7,20,700	7,20,700	1,61,924	5,58,776	
1914–15 ..	114,518	77,913	..	7,20,700	7,20,700	1,61,924	(a) 5,58,776	
1915–16 ..	114,518	77,913	..	7,20,700	7,20,700	1,61,924		

The figures in column 7 include the annual payment of Rs. 40,000 to the Travancore Government and the collection charges in the civil department at 5 per cent. on revenue. The working expenses are estimated at 12 annas per acre of the ultimate area to be irrigated for first crop.

(a) 6·38 per cent. on the total amount of estimate including indirect charges in lieu of 8·92 per cent. previously anticipated.

TABLE IV.—Estimate of net financial results

Years.	Direct capital outlay during the year.	Direct capital outlay to end of the year.	Simple interest at 4 per cent. on outlay to end of previous year *plus* half outlay during the year.	Net revenue including indirect revenue, column 7 of table III.	Simple interest *less* net revenue.	Net revenue *less* simple interest.
1	2	3	4	5	6	7
	RS.	RS.	RS.	RS.	RS.	RS.
Actuals to end of 1892–93 ..	13,13,558	50,82,141	4,68,665	..	4,68,665	..
Probable during 1893–94 ..	13,43,517	64,25,658	2,30,156	..	2,30,156	..
Estimate for 1894–95 ..	10,45,000	74,70,658	2,77,926	..	2,77,926	..
1895–96 ..	7,30,000	82,00,658	3,13,426	..	3,13,426	..
1896–97 ..	2,70,342	84,71,000	3,33,433	10,681	3,22,752	..
1897–98 ..	..	84,71,000	3,38,840	62,136	2,76,704	..
1898–99 ..	..	84,71,000	3,38,840	1,13,591	2,25,249	..
1899–900 ..	..	84,71,000	3,38,840	1,65,046	1,73,794	..
1900–01 ..	..	84,71,000	3,38,840	2,16,501	1,22,339	..
1901–02 ..	..	84,71,000	3,38,840	2,84,956	53,884	14,571
1902–03 ..	..	84,71,000	3,38,840	3,53,411	..	83,026
1903–04 ..	..	84,71,000	3,38,840	4,21,866	..	1,51,481
1904–05 ..	..	84,71,000	3,38,840	4,90,321	..	2,19,936
Estimate for 1905–06 ..	..	84,71,000	3,38,840	5,58,776	..	2,19,936
1906–07 ..	..	84,71,000	3,38,840	5,58,776	..	2,19,936
1907–08 ..	..	84,71,000	3,38,840	5,58,776	..	2,19,936
1908–09 ..	..	84,71,000	3,38,840	5,58,776	..	2,19,936
1909–10 ..	..	84,71,000	3,38,840	5,58,776	..	2,19,936
1910–11 ..	..	84,71,000	3,38,840	5,58,776	..	2,19,936
1911–12 ..	..	84,71,000	3,38,840	5,58,776	..	2,19,936
1912–13 ..	..	84,71,000	3,38,840	5,58,776	..	2,19,936
1913–14 ..	..	84,71,000	3,38,840	5,58,776	..	2,19,936
1914–15 ..	..	84,71,000	3,38,840	5,58,776	..	2,19,936
1915–16 ..	..	84,71,000	3,38,840	5,58,776	..	2,19,936
Total ..	..	..	80,61,566	82,65,045	24,64,895	26,68,374
Deduct	..	..	..	..	..	24,64,895
Net surplus revenue	..	..	..	..	..	2,03,479

(Signed) J. PENNYCUICK, Colonel, R.E.,
Chief Engineer, P.W.D.

ORDER—dated 3rd February 1894, No. 97 I., Public Works.

The revised estimates for the Periyár project amounting to Rs. 84,71,000 for direct charges, or Rs. 87,50,000 including indirect charges, are approved and will be submitted to the Government of India for sanction.

2. Ordered that the following letter be sent to the Government of India.

[Here enter No. 98 I., dated 3rd February 1894.]

(True Extract.)

(Signed) J. PENNYCUICK, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Superintending Engineer, VI Circle.
" Superintendent of Works, Periyár Project.
" Examiner, Public Works Accounts.
" Revenue Department.
" Political "
" Chief Engineer for Irrigation.

Exd. S. J. Pereira.
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IRRIGATION.
ACCOUNT.

Govt. of {1894} Madras.

PUBLIC WORKS.

Dated February, 3rd.

Recd. *Encl.*

G.O., 3rd Feb. 1894, No. 97 I.

FEBRUARY.

Periyar Project

Revised estimates of Rs. 87,50,000 of the —, approved and ordered to be forwarded to the Government of India for sanction.