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TAMIL NADU ARCHIVES

GOVERNMENT OF TAMIL NADU

Public Works **DEPARTMENT**

G.O. No. / B.P. No.	3272-73	Press. / Mis.
Dated	11-12-1882	197 .

S.G.M

Not to be folded or roughly handled

3272-73
1

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Buildings and Roads,
Civil Works.

No. 67.

READ—the following paper :—

Note by the Chief Engineer for Irrigation, dated 27th November 1882.

No. 68.

ORDER—dated 11th December 1882, No. 3272 W., Public Works.

Ordered that the following letter be addressed to the Government of India :—

(Here enter No. 3273 W., dated 11th December 1882.)

(True Extract.)

Captain, R.E.,
Ag. Under Secy. to Govt., P.W.D.

To the Chief Engineer for Irrigation, with copy of letter.

Exd. J. W. Fischer.
Spare Copies

BUILDINGS AND ROADS.
CIVIL WORKS.

Govt. of {1882} Madras.

PUBLIC WORKS.

Dated December, 11th.

Read. *Encl.*

G.O., 11th Dec. 1882, No. 3272 W.

DECEMBER.

Nos. 67-68.

Minor Irrigation Works of the Madras Presidency.

Proposals for dealing in a comprehensive manner with the —.

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2

PUBLIC WORKS DEPARTMENT.

Buildings and Roads.
Civil Works.

No. 69.

LETTER—from

COLONEL R. H. SANKEY, R.E., C.B.,
Secretary to Government, Public Works Department, Madras,

To

THE SECRETARY TO THE GOVERNMENT OF INDIA,
PUBLIC WORKS DEPARTMENT.

SIR,

From previous correspondence and particularly from the observation contained in paragraph 29 of my letter, No. 2696 W., dated 16th October 1882, the Government of India has been made aware that His Excellency the Governor in Council had in contemplation the submission of definite proposals for dealing in a comprehensive manner with the Minor Irrigation Works of this Presidency, the unsatisfactory condition of which has long been a source of anxiety to this Government and has attracted the serious attention of the Famine Commission; and, as the means of dealing with the question mainly depends on financial considerations, the opportunity was taken of the presence of the Hon. Major Baring to discuss its bearings in this aspect.

2. With this particular object the accompanying Note, dated 27th November, was drawn up by the Chief Engineer for Irrigation and its subject discussed with the Finance Minister, who expressed himself prepared to accept generally the proposals therein put forward as regards the provision of funds.

3. Under the assumption that these arrangements will receive the formal sanction of the Government of India, the effect will be to add 1½ lakhs to the provision of Rs. 18,28,300 already made under *No. 33, Irrigation and Navigation*, in the lately-received Budget Orders (No. 136 A.I., dated 15th November 1882,) for 1883-84, and that, until the termination of the Provincial Contract in 1886-87, the successive increments of 3 lakhs in 1884-85, 4·5 lakhs in 1885-86, and 7 lakhs in 1886-87, as laid down in the last paragraph of Colonel Hasted's note, will be provided for.

4. But it is needless to observe that the question at issue cannot be confined to merely granting supplies, and that of even greater importance is the provision of an efficient establishment; in regard to this point, therefore, I am desired to offer the following observations.

5. Colonel Hasted's general proposals in this respect are contained in paragraph 14 of his Note. He would entrust the starting of the work to a selected officer of experience in the grade of Superintending Engineer, and considers it necessary that an Executive Engineer should be appointed as Special Assistant to the Chief Engineer. Both of these appointments would be temporary, the first probably lasting for one year and the second for two years.

6. The permanent staff of the department would at the same time have to be increased so as to admit of a tank division being added each year in succession till

the limit of one such division in each Superintending Engineer's Circle has been ultimately reached, or in all six for the Presidency.

7. From among the officers now returning from special leave and furlough the Government hopes to be in a position to make at least two suitable selections for the senior officers' posts in this scheme; but as some difficulty is apprehended regarding the supply of officers for the remainder of the staff, and as the details have not as yet been fully matured, His Excellency in Council desires that this portion of the proposals may be deferred for discussion with Colonel Brownlow (Inspector-General of Irrigation Works), who is looked for here next month.

8. At the same time I am to observe that, in view to giving effect to the scheme in 1883-84, it is proposed to appoint the selected Superintending Engineer at once on his return from special furlough in about a month, and to provide for the whole of the proposed establishment in the budget for next official year, the proviso being that the cost of the establishment plus works shall not exceed the 1½ lakhs which the Finance Minister has expressed himself prepared to accept.

I have the honor to be,

Sir,

Your most obedient servant,

Captain, R.E.,
Ag. Under Secy to Govt., P.W.D.

Fort St. George,
11th December 1882.

Exd. J. W. Fischer.
Spare Copies

3272-73
B

BUILDINGS AND ROADS.
CIVIL WORKS.

Govt. of {1882} Madras

PUBLIC WORKS.

Dated December, 11th.

Read. *Encl.*

G.O., 11th Dec. 1882, No. 3273 W.

DECEMBER.

No. 69.

Minor Irrigation Works of the Madras Presidency.

PROPOSALS for dealing in a comprehensive manner with the —.

3272-73/4

NOTE BY THE CHIEF ENGINEER FOR IRRIGATION.

The records of past years show that so long as we have managed the country the condition of the irrigation works, that is tanks and channels such as are now classified as irrigation works for which neither Capital nor Revenue Accounts are kept, has been considered unsatisfactory, and that it has on all sides been considered that larger sums than could be allotted from the revenue should be expended on their maintenance, and that considerable expenditure would be requisite to put them into an efficient state.

2. The subject seems to have been first brought to notice by Sir Arthur Cotton (then Captain A. Cotton) in a letter to the Board of Revenue, dated 13th December 1837, from which the following quotations are made :—

"The irrigation works in general are so far from being in good order that the revenue actually derived from them at present is by no means the full measure of their value.

"The average wet revenue of the Carnatic districts for five years up to Fasli 1244, omitting Tanjore, and adding 3 lakhs of rupees for Chingleput, amounted to Rs. 85 lakhs.

"The wet revenue of the Carnatic, including Tanjore, amounted to Rs. 118 lakhs."

If the irrigation works are put in good order Captain Cotton estimated that the revenue would rise from 85 to 120 lakhs, making total revenue including Tanjore 153 lakhs; he assumes the revenue to be 40 per cent. of the crop, and that the returns in revenue to Government roughly are 20 per cent. on outlay, from which he draws the following conclusions :—

(1.) The original cost of the irrigation works may be about 825 lakhs of rupees.
(2.) The annual value of the crop dependent on them, if in good order, would be about 413 lakhs.
(3.) The annual revenue to Government would be about 165 lakhs.
(4.) Present actual revenue 118 lakhs.
(5.) Present total value of annual crop dependent on them, including rent free lands, about 320 lakhs.

Captain Cotton believes that nearly all the tanks in the country and nearly all the channels also, excepting those of Tanjore and the very large ones of other districts, water less lands than they once did, many only one-fourth, and very great numbers from one-half to three-fourths; and he instances several districts in which there has been a considerable falling off of revenue, while "In Tanjore there has been an increase of nearly 40 per cent. of gross produce in thirty years."

He gives the following account of the expenditure on irrigation works :—

Average expenditure of last six years in Tank Department	Rs.	5,30,000
Total revenue dependent on the works at present ...	,,	1,18,00,000
Expenditure about 5 per cent. on revenue :—		
Revenue which would be derived from works if in good order	,,	1,65,00,000
Expenditure as at present below 4 per cent. on this revenue :—		
Total value of gross produce at present	Rs.	3,20,00,000
Expenditure at present on total annual amount of property about 2 per cent.		
Supposed original cost of works	Rs.	8,25,00,000
Annual expenditure less than ¾ per cent.		

He says :—

"In England canals and such works, in which water is retained, require an annual outlay of 3 to 4 per cent., or from four to six times as much as here allowed.

"As the works are so very generally in want of extensive repairs, I am satisfied that a sum double the amount of the present expenditure would be most economically laid out for some years; indeed, I feel sure that if it is desirable to bring the same extent of land under effective irrigation as has been so at times within the last thirty years, it cannot be done with less than an annual expenditure of that sum, viz., 12 lakhs of rupees, at the very least for some years to come.

"I know that there are still numberless works, which if put into an efficient state would most amply repay the outlay. I would further urge an extended expenditure, not only on the ground of policy, but also of justice, the lands that are watered by Government works, are bought and sold in dependence upon the faith of Government that it will keep up a vigilant attention to those works; there are at this moment multitudes of estates that are of one-fourth or one-half the value that they once were, owing to the decayed state of the irrigation works.

"Even in the last twenty years, omitting Tanjore, the land revenue of the watered districts was on the average of five years terminating with—

"Fasli	1214	214 lakhs.
"	1219	216 "
"	1222	203 "
"	1229	215 "

Since when it has regularly declined in fifteen years to 1894 lakhs, being a falling off in that period of 26½ lakhs per annum, more than four times the whole cost of the Tank Department at present.

"It thus appears that in most of the districts there has been an actual, and in many a very considerable falling off, even during the short period of which we have any returns; and as the irrigation has undoubtedly been better attended to for the last ten years than it was twenty years ago, we cannot be mistaken in concluding that it had been declining previous to the period of the returns; and when to this is added the consideration, that almost all the districts when they came under our charge had been in such a state of confusion for some time that all the public works were in a dilapidated state (and the comparison is made with their revenue while in that state) the sad effects of the neglect of the irrigation must be most palpable; for it is certain that instead of the revenue having declined, had the tanks, &c., been put into a state of repair, it would have very greatly increased.

"The expenditure upon the irrigation has certainly not exceeded one-third of what upon the strictest principles of economy it ought to have been."

3. In 1851 a Commission was appointed by Government to inquire into and report upon the system of Public Works in the Presidency. The Commissioners submitted an exhaustive Report in December 1852, quoting largely from Captain A. Cotton's letter above referred to, and printing it in an appendix to their report. They value capital invested in construction of Government works of irrigation at 1,500 lakhs, and state that the annual outlay on works on average of past ten years has been 7 lakhs. Therefore cost of repairs is less than half per cent. on original cost,

or less than 2 per cent. on gross yearly proceeds,

or 4⅔ per cent. on annual revenue derived by Government.

They state that in the twelve following irrigation districts:—

Bellary,	Salem,
Cuddapah,	Trichinopoly,
Nellore,	Tanjore,
North Arcot,	Coimbatore,
South Arcot,	Madura, and
Chingleput,	Tinnevelly,

in Fasli 1259 the ayacut being ... ... 2,682,260 acres, and
assessment ... ... 1,84,21,555 rupees.

Cultivation in that, a good year, was 1,787,909 acres, assessment Rs. 1,12,89,352, leaving waste no less than 894,351 acres.

"In most districts it appears probable that the whole extent of the ayacut was formerly under cultivation though not all at the same time.

"Making allowance for all disabling causes by a deduction of even as much as one-third of the whole extent entered as irrigated, waste in above districts would amount to 1,262,906 acres."

Further on they state—

"In short all the works in the country, with a few exceptions, are in a state that may be called 'below par,' that is they are below their state of full efficiency, and incapble of effecting their proper amount of irrigation. The tanks are in want of sluices, or such as they have are out of order, or they have no calingulahs, or such as there are are too small or too high, and so the stability of the tank is in danger, or the bank is low or weak, and the ryots are afraid to store a full tank, or their channels of supply have been become choked up and no longer bring a full supply of water, and as to the irrigating channels many of them are in the state described * * * from the want of regulating works at their head; or they have become filled up by deposit, or the river has thrown up a bank in front of them and they get no water; or they have too few outlets for irrigation and the ryots cut through the bank; or the outlets are too large and a vast quantity of water is wasted. Such is unfortunately the description which now applies to a very large proportion of all the works of irrigation throughout the country, with the partial exception of the favored districts of Tanjore and a part of Trichinopoly."

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The Committee drew up a list of the works undertaken by Government in the past fourteen years for the improvements of irrigation. Most of them are the larger channels in the districts which show a very considerable return on expenditure; the general results are —

There are thirty-nine works, original cost Rs. 3,22,278. Percentage of yearly net revenue given on first cost—

Thirteen works vary from 259⅜ per cent. to 77 1/16 per cent.
Twenty-one " " 47½ " to 7⅞ "
Two works are between 3 and 4 per cent.
Three works are unremunerative.

"It must never be forgotten that for every 100 rupees of revenue so sacrificed a further loss of fully 150 rupees is entailed on the ryots."

On the subject of proposed outlay they say—

"Revenue from land irrigated by Government works amounts to 135 lakhs yearly; add for Inam lands under works which Government are bound to maintain 15 lakhs; total 150 lakhs. The sum now expended annually on repairs is about 7 lakhs of rupees. This would probably be sufficient if the works were once brought into good order, but they are in general much out of repair, and a considerable expenditure is required to bring them to a proper point of efficiency so as to yield a maximum return. We would propose 15 lakhs yearly as the usual expenditure in maintaining existing works and bringing them into an efficient condition, including the furnishing them with proper sluices and calingulahs, improving their sources of supply and other minor and ordinary improvements; 15 lakhs of rupees steadily laid out every year on these objects, under able and judicious direction, would soon produce a marked effect. The proposed expenditure would be 10 per cent. on the present revenue from irrigation, but this rate would be gradually reduced as the effect of the improvement became apparent and as the whole number of works in efficient repair became larger year by year.

"The Native Princes who constructed the works of irrigation subjected every acre of land irrigated to a special cess for the purpose of keeping the works in repairs. After the assumption of the Government by the English, all the items making up the land revenue were consolidated into a single demand, for the most part a fixed sum in money per acre or cawny, the revenue in kind being commuted; these fees are therefore paid to Government on the express condition that the works shall be kept in good repair."

In addition to 15 lakhs to be expended yearly on maintenance and minor works, the Committee propose that 7½ lakhs at least should be annually devoted to the object of extending the benefits of irrigation.

"Thus the whole ordinary and usual sum proposed to be spent yearly on works of irrigation is 22½ lakhs.

"We have been brought to the opinion that the surplus revenue of this Presidency when fairly computed, *i.e.*, the surplus over its own expenditure or over the expenditure of the territories of which it receives the revenue, is much larger than appears under the present mode of making up the Imperial accounts.

"But whether the present surplus of revenue over expenditure be large or small, we would contend against the principle of making the accidental amount of that surplus, the measure of the expenditure on improvements morally certain to produce a large increase of revenue by the legitimate and really beneficial means of augmenting the comfort and the resources of the people."

The Committee recommend that the sum they have fixed for expenditure on irrigation works should be so expended without consideration of the current surplus revenue, that it should be, if necessary, raised by loan, it being the part of true wisdom to borrow money at 5 per cent. which will return directly 20 per cent.

4. In consequence of this report the Public Works Department was, in very much its present shape, organized and entrusted with the maintenance of all irrigation works, and under the new régime all help from the ryots, which under the name of Kudiramanut or customary labor had been enforced while the works were under the Revenue Department, ceased, and the cost of maintenance thrown upon the Government was necessarily enhanced. The new Department not having worked altogether satisfactorily a Committee was, after the lapse of some years, appointed to report on the subject. Their report was submitted in 1870, and in it they say:—

"Evidence shows that the works are not in that state of efficiency in which they require to be placed and that, treating the works as a whole, the expenditure of money on them has not been sufficient.

"Public Works Commissioners in 1851 state the average annual outlay on repairs of irrigation works was 7 lakhs, or 5 per cent. on the revenue then yielded by irrigated land. Adverting to the great increase which has since taken place in the cost of labor and materials, and having

in mind how much State expenditure on irrigation works was at that time supplemented by the co-operation of the ryots, we have no doubt that the average expenditure of late years represents an outturn of work, especially of minor works, far smaller than that executed in former years.

"A percentage of the revenue from irrigation should be devoted to the maintenance of the works, to be treated as a first charge on the revenue. We recommend that this charge be fixed at 8 per cent. on the revenue, and that the sum so obtained be devoted entirely to the maintenance of such of the irrigation works of the several districts as are not otherwise provided for, including under the head of maintenance such minor improvements, the construction of sluices, &c., as may be found requisite for the safety of the works, or for increasing their usefulness.

"Eight per cent. on the revenue, taking the revenue on irrigated lands at 170 lakhs, would give an annual grant of Rs. 13,60,000 for the maintenance of existing works. This sum is less than the grant, viz., 14 lakhs, which for the last two or three years has been annually entered in the budget under the head of Agricultural Repairs, but it is considerably more than has actually been spent on irrigation repairs."

5. Major (now Colonel) Mullins, in a dissent from Commissioner's report, says,

"I concur entirely with the report of the majority in considering that the irrigation works generally are not in that condition of efficiency in which they require to be placed, as also in the opinion that the grants of money for irrigation repairs, have, for a series of years, been altogether inadequate.

"I am of opinion that it will be necessary to allow, for several years to come, a considerably larger outlay (than 8 per cent. on the revenue)."

6. Sir W. Robinson, in a minute attached to the report, says,

"The conviction is thus forced on one that, however faithfully the proposed assignment may in future be apportioned amongst the works needing repair and maintenance, an assignment of 8 per cent., or even a much larger proportion of the gross wet revenue, if spent on the extravagant system now followed, must fail to meet the urgent demands of the country within any reasonable period."

Sir W. Robinson in referring to "the extravagant system" contemplated more being done by the people themselves.

He does not consider that there was any obligation on the State to maintain single-handed the old existing communal agricultural works, or that the consolidated wet revenue demand is a special charge conditional on the supply of State water.

He recommended that minor irrigation works should be classed as grant-in-aid works, that 6¼ per cent. (one anna in the rupee) should be assigned as a Local Fund in the district to meet grants-in-aid not exceeding half the estimated cost, for the repair and improvement of any work. The cultivators under the work paying the rest and finding the labor as occasion requires.

7. The Department was after this reorganized, but the results as regards minor irrigation works has not been very satisfactory, no more money being available for them. The next enquiry into the state of these works was made by the Famine Commissioners in 1878 who state as follows:—

"Petty Irrigation Works.—The account given of the condition of these is by no means satisfactory. In former days they were to a great extent maintained by a system of contributed or statutory labor, the Government being held liable only for any considerable work of improvement or restoration, and the ordinary petty yearly repairs being done by the population interested in the irrigation. In 1856-57 the duty of initiating tank repairs was transferred from the Revenue officials to the re-organized Public Works Department without, however, the power which has been enjoyed by the Collector, of enforcing statutory labor. Since that time the ryots have taken less and less part in the maintenance and repair of tanks and channels. On the other hand, the Public Works Department, though spending considerable sums annually in the repair of particular works have not been able to carry out all the necessary restorations; and there are many works which have fallen out of order for want of proper supervision and timely repair.

"There is a general consent that the measures now adopted for the maintenance of the tanks in efficiency are wholly inadequate. The expenditure has been more liberal of late years; but still the Irrigation Department reckon that, in order to make the more important tanks safe in years of ample rainfall, an annual grant three times as great as that hitherto appropriated for this purpose, and a period of 20 years would be necessary. Such a delay in effecting a necessary improvement would be very bad economy. The security of the annual revenue of £700,000, which is dependent on these works, is a matter which the Government cannot be justified in overlooking; and any loss which Government sustains corresponds to far more serious damage inflicted on the agricultural class. The Government ought then, in our opinion, to frame a scheme for putting the tanks into order with as little delay as financial considerations and the arrangements of the administration will permit, and carry it out in a systematic and continuous method till this serious cause of preventible loss has been removed."

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8. In an appendix to the Famine Commissioner's Report is a report by the Irrigation Committee appointed under them, in which certain recommendations for the treatment of minor irrigation works are made, which have been approved by Government and are now being carried out. Generally speaking the works are being divided into two classes:—

(1.) Those which irrigate more than 200 acres, which are called "Imperial."

(2.) Those which irrigate less than 200 acres, which are called "Minor."

All works however coming under the second head which from their position affect Government works of any consequence are classed under the first head.

Imperial works are to remain under the charge of the Public Works Department and minor works are temporarily placed under the charge of the Revenue Department, it being intended that subsequently they should be sub-divided into three classes, some of them being entirely handed over to the ryots and others maintained by the ryots in return for a certain remission of revenue. A Kudimaramut Bill has also, in accordance with the recommendations of the Committee, been prepared and submitted to Government, and an Irrigation Law has been drafted. Steps are thus being taken towards better management of the tanks and channels, but from all districts come complaints that the funds allotted for minor irrigation works are insufficient and that the works are generally in bad order.

9. It would thus appear that the condition of the irrigation works in the Presidency is much the same as when Captain A. Cotton reported on them in 1837, but from Statement I appended it appears that the expenditure on the works was considerably increased after 1866-67, the average expenditure of the five years ending—

1851-52 being ... ... Rs. 7,79,402
or 7·54 per cent. on the revenue.

For the five years ending 1871-72 being ... ... ,, 14,12,870
or 12·34 per cent. on the revenue.

For the five years ending 1876-77 being ... ... ,, 11,53,426
or 10·54 per cent. on the revenue.

The average revenue for these periods being—

Rs. 1,03,42,713
,, 1,14,50,543
,, 1,09,40,747

and the reports of late years show that latterly—

194 tanks * have been put in good order,
1,289 sluices * have been built,
1,139 weirs * have been constructed.

* From 1874-75 to 1881-82.

Statement II shows the grants that have been made for the past six years for Original Works and Repairs, and it will be seen that while the annual grant for repairs varies from a little over 6 lakhs to nearly 9 lakhs, from 2¼ to 3¼ lakhs were allotted annually for Original Works.

Statement III shows the expenditure on Agricultural Works, under which head are classed River Embankments, River Conservancy, Drainage, &c., for a series of years, and proves that while the improvement of tanks and channels have received attention, a considerable proportion of the available funds has been expended on these essential works.

Before the famine, steps were taken under the direction of the Chief Engineer for Irrigation to group the tanks and channels in all districts, that is, to ascertain the circumstances of each individual work with reference to those lying above and below it in each drainage basin, and to note the requirements. The progress made in this work is as follows:—

	Area.	Revenue.
Works grouped	392,697	18,94,654
Works to be grouped	2,413,021	70,92,836
	2,805,718	89,87,490

This necessary work was interrupted by the famine, and the subsequent reduction of establishment in the Department prevented it being again taken up, and latterly the time that would have been occupied on this work has been taken up in classifying the

works as Imperial and Minor. When this classification has been finally completed, which it is anticipated it will be very shortly, it is proposed to take up the subject of the future maintenance of minor irrigation works specially, and to this end the evidence taken before the last Committee appointed by the Madras Government to consider the subject has been abstracted and the opinions of selected officers are being collected. Until this is done the expression of my individual opinion would be premature, and it need only be said that the subject must ere long be definitely disposed of.

10. Meanwhile, although full enquiry into the circumstances of each individual work is necessary to allow of money being economically expended, there are many works whose requirements have been ascertained, but not yet attended to, and many minor works on which to prevent risk of loss to Government and the cultivators, repairs of a nature not requiring scientific superintendence, are emergently required, and on these works a larger annual grant than is now made can be usefully expended.

11. The work to be done must be classed under two heads.—

(1.) Bringing each work up to the standard of efficiency and providing proper weirs and sluices.

(2.) Maintenance of works already brought up to the standard.

The first of these will bear no relation to the revenue, in many cases it will mean simply restoration, but in the case of most works it will be a work of improvement; the majority of the smaller tanks have never been provided with efficient weirs and in very many instances water has been drawn from the tanks by cuts through the banks or by rough sluices of hollow trees which are a continued source of danger to the works. In these cases the work to be done would be classified as "Extensions and improvements."

Under the second head "Maintenance," which must be understood to mean ordinary repairs which the ryots cannot perform, the expenditure should, it is thought, be a certain percentage of the revenue, and here we have the opinions of the Committees and individuals above noted for guidance. Starting with that of Sir A. Cotton we have the statement that works in which water is retained require an annual outlay of 3 to 4 per cent. on the cost of the works. The Committee of 1852 state that 10 per cent. on the revenue should be expended on maintenance and improvement. The Committee of 1870 considered that 8 per cent. on the revenue should be expended on maintenance including minor improvements. Major (now Colonel) Mullins considered that a much larger outlay than 8 per cent. on the revenue would be required for many years and Sir W. Robinson proposed 6¼ per cent. (one anna in the rupee) on the revenue only as a grant-in-aid. If we suppose the total assessment, including second crop, to average 6 rupees per acre, 8 per cent. on the revenue would approximate to a charge of 8 annas per acre, and here perhaps may be a guide in settling the charge. The cost of maintenance on the principal systems of irrigation is as follows:—

Godávari Delta	4½ annas per acre.	Srivaikuntham Anicut	11 annas per acre.
Kistna	„ 8 „ „	Pálár	„ 4½ „ „
Pennér Anicut	5 „ „	Chembrambakam Tank	3¾ „ „

These works have the advantage of being concentrated, and under an efficient establishment, so that in the case of scattered works, many of which cannot be under the immediate eye of the permanent establishment, it does not appear unreasonable to allow a maintenance charge of 8 annas per acre, which on existing cultivation (say 2,500,000 acres) would amount to an annual grant of Rs. 12,50,000.

12. Returning now to the first head of proposed expenditure, "bringing each work up to the standard of efficiency," it is extremely difficult to estimate the cost of the work to be done, but taking the Report of Famine Commission, which quotes the opinion of the "Irrigation Department" as a guide, we find it is estimated that an expenditure of three times the annual grant hitherto appropriated will be necessary for twenty years. The annual expenditure (average of five years before the famine) was in round numbers Rs. 11,50,000, so that the proposed annual grant amounted to Rs. 34,50,000; this sum was of course to include the cost of maintenance, so that if we deduct 8 annas per acre for maintenance, the balance, Rs. 22,00,000, represents the sum which should be annually available for expenditure on "restoration" or "Extensions and Improvements." In twenty years this would amount to 440 lakhs, or adding one-fourth for Establishment and Tools and Plant to 550 lakhs. In the Note by the Chief Engineer for Irrigation, printed with G.O., No. 685 I., 11th October 1881, copy

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of which was forwarded to the Government of India, it is stated that 65 lakhs will be required to furnish tanks and channels with requisite masonry works and for minor miscellaneous improvements, but it may be noticed that this does not include the work that would be necessary to bring the tanks to a proper standard of efficiency.

13. As to the return to be expected from this expenditure, it is necessary to refer to a statement printed with letter No. 2696 W., dated 16th October 1882, from the Madras Government to the Government of India. Here it is shown that under the class of works now being treated of—

The ayacut was	... ...	Acres 5,190,000
The assessment was	... ...	Rs. 2,48,20,000

but that in consequence of the bad condition of the works the aggregate losses each year, in the opinion of the Revenue officers of Government, amount to not less than 40 lakhs. The ayacut is supposed to be the irrigable area under the work, but there are many cases where the ayacut includes land which in its present state cannot be irrigated and possibly never may be irrigated. It is true that if each work were brought up to its original irrigating capacity, though some of the ayacut might remain uncultivated, other waste lands not included in the ayacut might be irrigated, and it may be reasonable to set off the one against the other. Here then is the return to be expected from the outlay as given above, it amounts to 7·2 per cent.

14. The question now arises, how the money required can be expended, and it is necessary to call attention to the fact that to avoid loss by wasteful expenditure a considerable sum must be spent on "preliminary expenses." The grouping must be completed. As each group is worked out, and the circumstances of every individual tank in it ascertained, work can then be taken up without waiting for the grouping in each district or division to be completed, but the first thing to be done is to put on an establishment to deal with the grouping. The permanent establishment is not sufficiently strong to deal with it, and also to carry out works on any extended scale. The subject of the future management of minor irrigation works must be connected with the work of grouping, because the determination of what tanks should be abandoned, and what tanks can be handed over to the ryots without risk to other interests, depends on the investigation of the circumstances of each work.

The proposal that has been made to constitute tank divisions seems on the whole to be the best way of dealing with the subject, and it has this advantage that the working may be extended by the constitution of more divisions. It is in the first instance essential that work should be started on a proper footing, and though the tank divisions would work under the Superintending Engineers, it does not seem advisable, owing to the different number and condition of the works in each civil district, simply to give each Superintending Engineer a new division and let him commence work in his own way. An officer of some experience should be appointed to start the work, as at first the settlement of the question of the future management of the smaller tanks would claim considerable attention, but once the work was started on a proper footing and a decision come to as to the management of the smaller works, he might be withdrawn and the divisions left to the Superintending Engineer. It may also be desirable to appoint an Executive Engineer as Assistant to the Chief Engineer for Irrigation for a time. These would be special appointments, and would, with establishment, cost about Rs. 24,000 a year.

The cost of one tank division would be Rs. 32,000, and as considering the works are much scattered a large sum cannot be expended by each division in carrying out work, it is probable that 1½ lakhs per annum would be the expenditure including establishment and tools and plant of each division. If the work is begun next year, one division might be started, and 1½ lakhs would be required, the following year two divisions, and so on, as men were available, till at least one division would be working in each circle, and the expenditure would then be 9½ lakhs or, as the special officers might by that time be withdrawn, to 9 lakhs. An annual expenditure of 10 lakhs would make the work last fifty-five years, and although tank divisions might be increased to almost any extent yet there seems no hope of bringing the works up to the proper standard of efficiency in a short time, and when we find twenty years spoken of as an unreasonable time to be occupied on it, it can only be supposed that the magnitude of the work has not been fully considered. If work is

taken up as proposed, the following is a rough forecast of the expenditure necessary in the next five years:—

	Improvements to Irrigation Works. LAKHS OF Rs.
1883-84	1·5
1884-85	3
1885-86	4·5
1886-87	7
1887-88	10

This expenditure is to be incurred solely on the work to be undertaken by the tank divisions, until they are working properly. Works of maintenance and improvement must be carried out, as they are at present, imperfectly, by the permanent establishment. In the fourth year probably all works of improvement will be taken up by the tank divisions, and then the budget should provide, under Ordinary Irrigation and Navigation Works, 7 lakhs for Improvements to Irrigation Works; Maintenance at 8 annas per acre, (say) 12½ lakhs, and Agricultural Works 4 lakhs; total 23½ lakhs—to be increased the following year to 28½ lakhs.

(Signed) J. O. HASTED, Colonel, R.E.,
27th November 1882. Ag. Chief Engineer for Irrigation.

I.

from, and Outlay incurred on, Irrigation and Navigation Works for which neither
s of the Madras Presidency for 35 years from 1847-48 to 1881-82.

Years.	Area irrigated. AVERAGE FOR FIVE YEARS.		Revenue.	Outlay.	Percentage of Outlay on Revenue.	Remarks.
	Area irrigated. Government.	Area irrigated. Zemindari and Inam.				
	Acs.	Acs.	Rs.	Rs.	Rs.	
1847-48 to 1851-52	15,16,776		1,03,42,713	7,79,402	7·54	
1848-49 to 1852-53						
1849-50 to 1853-54						
1850-51 to 1854-55						
1851-52 to 1855-56						
1852-53 to 1856-57						
1853-54 to 1857-58						
1854-55 to 1858-59						
1855-56 to 1859-60	16,41,853		1,22,25,925	9,80,185	7·94	
1856-57 to 1860-61						
1857-58 to 1861-62						
1858-59 to 1862-63						
1859-60 to 1863-64						
1860-61 to 1864-65	17,31,990		1,35,39,802	7·94		
1861-62 to 1865-66						
1862-63 to 1866-67						
1863-64 to 1867-68						
1864-65 to 1868-69						
1865-66 to 1869-70	19,15,889		1,17,74,439	7,39,242	6·22	
1866-67 to 1870-71						
1867-68 to 1871-72						
1868-69 to 1872-73						
1869-70 to 1873-74						
1870-71 to 1874-75	20,29,608		1,44,60,543	14,13,870	12·34	
1871-72 to 1875-76						
1872-73 to 1876-77						
1873-74 to 1877-78						
1874-75 to 1878-79						
1875-76 to 1879-80	22,36,887	6,04,681	1,09,40,747	11,53,426	10·54	
1876-77 to 1880-81						
1877-78 to 1881-82						
1878-79 to 1882-83						
1879-80 to 1883-84						

* Includes famine expenditure in 1866-67 and 1867-68.

Public Works Establishment was reduced.
Value of work done from Famine funds on the Pálár anicut channels erroneously debited to this head in 1878-79 was written back during the year.

3272-73

STATEMENT showing the Total Area irrigated under, the Revenue derived
Capital nor Revenue Accounts are kept in all the District

Years.	Area irrigated. Government.	Area irrigated. Zemindari and Inam.	Revenue.	Outlay.	Percentage of Outlay on Revenue.
	Acs.	Acs.	Rs.	Rs.	Rs.
1847-48 to 1851-52	14,70,536		1,05,34,173	10,30,546	9·78
1848-49 to 1852-53	16,22,315		1,00,94,515	7,39,465	7·32
1849-50 to 1853-54	16,50,303		98,38,379	6,14,143	6·24
1850-51 to 1854-55	16,92,009		1,02,42,763	6,03,060	5·88
1851-52 to 1855-56	16,68,714		1,13,03,646	9,13,796	8·08
1852-53 to 1856-57	17,14,197		1,20,87,102	..	..
1853-54 to 1857-58	17,54,079		1,19,19,669	..	..
1854-55 to 1858-59	16,40,077		1,17,26,498	..	..
1855-56 to 1859-60	16,07,113		1,27,27,307	11,05,337	8·68
1856-57 to 1860-61	16,77,075		1,26,59,048	11,96,234	9·44
1857-58 to 1861-62	16,60,510		1,26,62,643	9,34,017	7·37
1858-59 to 1862-63	17,26,405		1,48,80,514	13,60,660	9·14
1859-60 to 1863-64	17,76,790		1,17,44,407	11,40,935	9·71
1860-61 to 1864-65	17,66,663		1,11,88,920	8,00,887	7·15
1861-62 to 1865-66	18,32,719		1,17,32,628	6,74,706	5·75
1862-63 to 1866-67	19,63,249		1,21,97,313	7,70,795	6·31
1863-64 to 1867-68	19,35,007		1,17,57,392	5,76,304	4·90
1864-65 to 1868-69	18,38,901		1,11,41,000	8,52,184	7·64
1865-66 to 1869-70	20,19,648		1,17,39,563	6,61,042	5·63
1866-67 to 1870-71	21,04,641		1,20,30,978	8,00,886	6·65
1867-68 to 1871-72	18,86,179		1,10,39,761	* 17,18,016	15·56
1868-69 to 1872-73	19,66,063		1,14,71,294	15,72,795	13·71
1869-70 to 1873-74	19,63,278		1,14,63,203	13,15,604	11·47
1870-71 to 1874-75	20,12,968		1,19,95,310	13,15,194	10·96
1871-72 to 1875-76	22,99,555	4,39,985	1,12,88,150	11,41,343	10·10
1872-73 to 1876-77	24,46,645	3,33,460	1,17,27,801	11,72,202	9·99
1873-74 to 1877-78	25,58,862	2,49,363	1,16,36,169	12,80,853	11·00
1874-75 to 1878-79	21,57,302	9,26,782	1,33,80,399	11,61,095	8·67
1875-76 to 1879-80	22,94,096	7,94,344	1,10,57,876	10,71,212	9·68
1876-77 to 1880-81	18,92,633	7,19,019	75,01,503	11,40,777	15·20
1877-78 to 1881-82	24,01,710	7,19,336	1,17,89,730	11,07,472	9·39
1878-79 to 1882-83	25,17,670	7,78,363	1,19,92,215	12,61,898	10·52
1879-80 to 1883-84	25,13,870	7,37,866	1,20,01,671	7,30,815	6·09
1880-81 to 1884-85	25,11,935	8,87,579	1,21,35,092	4,11,009	3·39

II.

STATEMENT of Grants for Irrigation and Navigation Works for which neither Capital nor Revenue Accounts are kept, from 1876-77 to 1881-82.

Districts.	1881-82.		1880-81.		1879-80.		1878-79.		1877-78.		1876-77.	
	Original Works.	Repairs.	Original Works.	Repairs.	Original Works.	Repairs.	Original Works.	Repairs.	Original Works.	Repairs.	Original Works.	Repairs.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Ganjam	5,000	30,000	5,000	10,000	4,000	30,000	4,500	12,820	4,500	17,000	3,000	29,000
Vizagapatam			2,500	5,000	2,000	12,000	2,000	11,890	1,800	16,500	2,000	19,000
Godávari	4,800	9,000	5,160	1,500	7,000	22,000	7,500	17,340	17,111	17,000	11,500	15,200
Kistna	500	4,100	500	3,000	7,000	10,000	7,000	8,920	10,500	8,000	3,500	5,200
Nellore	8,000	40,000	10,000	50,000	6,000	60,000	7,000	59,470	7,000	60,000	19,850	36,000
Bellary	10,000		..	..	7,000	40,000	7,000	49,560	7,000	50,000	8,000	60,000
Cuddapah	6,000	60,000	20,743	32,500	10,000	45,000	11,000	46,090	9,500	30,000	12,000	40,000
Kurnool	..		5,000	12,000	12,201	25,000	10,000	44,600	18,120	50,000	23,555	52,000
Chingleput	27,267	40,000	47,247	75,000	22,000	78,210	16,350	83,210	42,340	82,000	53,942	87,000
North Arcot	11,000	53,000	15,000	55,000	14,200	80,000	14,800	76,320	15,000	97,000	20,000	35,500
South do.	42,000	90,000	10,000	96,000	10,000	1,06,000	12,000	99,110	17,000	92,510	42,000	1,04,000
Salem	40,000	20,000	20,000	..	57,486	42,000	16,000	67,390	20,500	64,000	26,000	53,000
Coimbatore	10,970	35,000	14,850	60,000	7,000	48,500	7,500	45,100	5,500	66,400	6,000	70,500
Tanjore	5,000	11,000	12,720	15,000	2,500	10,500	2,500	9,210	3,500	10,000	2,000	..
Trichinopoly	6,000	30,000	6,000	30,000	6,000	44,000	7,500	39,660	16,260	40,100	8,000	43,000
Madura	2,000	10,000	..	..	6,000	50,000	11,000	59,480	5,430	49,000	4,000	49,000
Tinnevelly	12,200	60,000	5,000	70,000	20,000	1,20,000	24,216	1,48,880	22,354	57,600	36,100	61,000
Reserve ..	36,550	1,32,000	39,000	25,000	10,800	..	35,000	..	54,274	..	41,500	..
Total ..	2,20,276	6,25,000	2,21,300	5,17,000	1,91,287	8,20,710	2,04,816	8,95,050	2,84,149	8,04,410	3,21,392	8,12,200

III.

STATEMENT showing Outlay on Agricultural Works incurred from 1863-64 to 1881-82.

Districts.	1863-64.		1864-1865.		1865-66.		1866-67.		1868-69.		1875-76.		1876-77.		1877-78.		1878-79.		1879-80.		1880-81.		1881-82.	
	Original Works.	Repairs.	Original Works.	Repairs.	Original Works.	Repairs.	Original Works.	Repairs.	Original Works.	Repairs.	Original Works.	Repairs.	Original Works.	Repairs.	Original Works.	Repairs.	Original Works.	Repairs.	Original Works.	Repairs.	Original Works.	Repairs.	Original Works.	Repairs.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Ganjam ..	1,235	..	..	..	..	..	..	..	..	..	1,819	12,617	54	12,609	162	15,543	70	8,190	107	3,562	..	250	..	..
Vizagapatam ..	..	..	..	..	..	..	..	..	..	..	1,875	100	731	3	829	..	673	..	2,303	..	..	..	..	180
Godávari ..	..	..	..	..	..	..	..	..	..	..	42,784	40,883	31,602	47,619	15,952	28,351	..	21,025	..	23,757	22,256	27,112	28,831	34,994
Kistna ..	..	..	1,575	..	3,177	..	415	..	..	..	..	15,921	..	..	3,433	3,433	1,178	2,746	9,128	445	64,121	7,205	10,125	5,984
Nellore ..	..	..	..	..	..	..	..	..	..	..	1,408	4,365	38,999	3,005	15,481	160	4,173	2,245	12,142	144	5,341	131	1,482	304
Cuddapah ..	..	..	..	..	..	..	..	..	..	..	..	6,513	1,429	874	801	693	5,202	727	1,488	744	479	435	..	431
Bellary ..	..	..	..	..	..	..	..	..	..	..	29	89	..	..	178	203	..	..	..	..	..	..	..	..
Kurnool ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Chingleput ..	..	..	..	..	..	..	8,445	..	278	..	..	4,726	115	2,273	1,230	1,574	72	3,132	2,520	278	2,490	1,093	314	967
North Arcot ..	..	..	..	..	..	..	..	..	..	..	..	2,925	142	1,730	..	127	91	..	490	..	..	..	25	..
South do. ..	..	..	2,310	..	..	..	3,909	..	..	..	255	10,691	112	1,247	..	14,507	110	1,905	..	13,184	349	13,303	..	12,029
Salem ..	..	..	..	..	..	..	..	..	..	..	44	3,864	..	3,274	..	..	650	750	..	1,405	..	1,448	176	456
Coimbatore ..	..	..	..	..	..	..	..	..	..	..	5,350	5,801	108	4,137	..	402	132	2,528	2,323	7,272	1,858	6,150	501	5,306
Tanjore ..	..	..	..	..	1,900	..	3,284	..	..	..	..	1,14,418	1,312	61,413	759	66,667	..	61,487	962	69,552	1,002	68,855	1,356	68,844
Trichinopoly ..	..	..	..	..	..	..	..	..	..	..	..	29,661	3,316	36,331	3,637	38,523	15	36,014	625	15,323	5,010	19,402	755	30,527
Madura ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	302	..	..	..	511	..	..	..	..
Tinnevelly ..	..	..	..	..	..	..	..	..	..	..	..	4,239	..	3,02	..	471	..	29,153	7,000	5,225	5,303	8,126	17,228	3,000
Total ..	1,235	..	3,885	..	5,077	..	15,646	..	278	..	52,326	2,52,268	81,640	2,17,773	50,927	2,11,377	12,622	1,38,801	36,190	1,25,513	63,350	1,50,601	1,06,031	1,55,382

26960 No 10 12

No 3273 W dated 11th Dec 1882

Ordered that the following letter be addressed to the Govt of India

KL

22/12

The C.E. for I with copy of letter

No 3273 W dated 11th Dec 1882

To

The Secretary to the
Government of India
P.W.D.

Sir,

From previous correspondence and particularly from the observation contained in para 29 of my letter No 2696/96 W dated 16th October 1882, the Government of India has been made aware that His Excellency the Governor in Council hoped in consequence the submission of definite proposals for dealing in a comprehensive manner with the minor irrigation works of the

Presidency, the unsatisfactory condition of which has long been a source of anxiety to the Government and has attracted the serious attention of the Famine Commission, and as the means of dealing with the question mainly depends on financial considerations, the opportunity was taken of the presence of the Hon'ble Major Baring to discuss its bearings in this aspect.

2. With this particular object the accompanying Note dated 27th Nov. was drawn up by the Chief Engineer for Irrigation and its subject discussed with the Finance Minister who expressed himself prepared to accept generally the proposals therein put forward as regards the provision of funds

3. Under the assumption that these arrangements will receive the formal sanction of the Government of India, the effect will be to add 1½ Lakhs to the provision of 18,28,300 already made under No. 33 Navigation and Irrigation in the lately received Budget Orders (No. 136 A. I. dated 13th November 1882) for 1883/84 and that until the

lomination of the Provincial Contract in 1886/87 the successive increments of 3 Lakhs in 1884-85, 4·5 Lakhs in 1885-86, and 7 Lakhs in 1886-87, as laid down in the last para of Colonel Waslet's note, will be provided for.

4 But it is needless to observe that the question at issue cannot be confined to merely granting supplies, and that of even greater importance is the provision of an efficient establishment; in regard to this point therefore I am desired to offer the following observations -

Coll

5 Colonel Wasley's general proposals in this respect are contained in para 14 of his Note. He would entrust the starting of the work to a selected officer of experience in the Grade of Superintending Engrs and considers it necessary that an Executive Engr should be appointed as Special Assistant to the Chief Engr - Both of these appointments would be temporary, the first probably lasting for one year and the second for two years -

6 The permanent staff of the Department would at the same time have to

to be increased so as to admit of a tank division being added each year in succession till the limit of one each Division in each Presy: Circle has been ultimately reached or in all six for the Presidency. —

47 From among the Officers now returning from special leave and furlough the Government hopes to be in a position to make at least two suitable selections for the senior Officers posts in this Scheme, but as some difficulty is apprehended regarding the supply of Officers for the remainder of the Staff and as the

32 72-73
13

details have not as yet been fully matured Hs Excellency in Council desires that this portion of the proposals may be deferred for discussion with Coll Brown Insp Genl Superior Genl of Irrigation Works) who is looked for here in all next month.

2. At the same time I am to observe that in view to giving effect to the scheme in 1883-84 it is proposed to appoint the selected Supdg Engrs at once on his return from special furlough in about a month, and to provide for the whole of the proposed Establishment in the Budget for

~~In Establishment~~

the next official year
the proviso being that
the cost of the Establish
-ment + works shall
not exceed the 1½ Lakhs
which the Finance
Minister has expressed
himself prepared to
accept.

Draft by Secretariat 13-12-82

Attt

19/12/82

Copy sent to Def Engr for
Engr for info 17/12

Cir 9/12
Rec 11/12

3222-23
14

Govt. of [illegible] Madras
PUBLIC WORKS.

Dated

Rcvd. Encl.

G. O., 11 Dec. 1882, No. 3272.
3273.

Nos. ~~67-25~~
67-68
69

Minor Irrigation Works
of the Madras Presy.

Proposals for dealing
in a comprehensive
manner with the —

29 enclosures
29 enclosures
1

Entd. in Receipt Book