(1) பக்கங்களின் எண்ணிக்கை 48
(2) புதுக்கித் திருப்பிய நாள் 17-5-88
(3) ஆதாரங்குறிப்பவர் சுருக்கொப்பம்

தமிழ்நாடு ஆவணக் காப்பகம்.

தமிழ்நாடு அரசு

P.W. துறை

அரசாணை எண். மு. கோப்புத் தாள் எண்.	426-427 W	அச்சகம் பலவகை

நாள் : 6.2.1888 ~~198~~.

மடிக்கவோ கண்டபடி கையாளவோ கூடாது

P.W.

ஆவண. கா-1—18,000—15-6-87.

6th February 1888, No. 427 W., Public Works. 428

PUBLIC WORKS DEPARTMENT.

General.
Account.

Letter—from

Colonel J. O. HASTED, R.E.,
Secretary to the Government of Madras,
Public Works Department,

To

The SECRETARY to the GOVERNMENT of INDIA,
Public Works Department.

Sir,

With reference to paragraph 4 of your letter, No. 1721 G., dated 2nd September 1887, I am directed to forward the accompanying copy * of a note by the Chief Engineer for Irrigation with a statement showing the forecast of expenditure during the next five years on the projects enumerated in this office letter, No. 1697 W., dated 9th July 1881. The figures relating to the Potinghi ghât and the Potinghi-Koraput road have been filled in by the office of the Chief Engineer, Public Works Department.

* Proceedings of Government, No. 426 W., dated 6th February 1888.

I have the honor to be,
Sir,
Your most obedient servant,

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

Fort St. George,
6th February 1888.

Exd. J. Moses.
Spare Csopie

GENERAL.
ACCOUNT.

Govt. of {1888} Madras.

PUBLIC WORKS.

Dated February, 6th.

Recd. *Encl.*

6th Feb. 1888, No. 427 W.

FEBRUARY.

Project Works

Statement showing forecast of expenditure on — during the five years ending with 1892-93.—Forwarding copy of note by the Chief Engineer for Irrigation with a — with remarks.

426-427/3

4th October 1887, Nos. 2610, 2611 W., Public Works.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General.
Establishment.

Read—the following letter from Colonel R. C. B. PEMBERTON, R.E., Secretary to the Government of India, Public Works Department (General), to the Secretary to the Government of Madras, Public Works Department, dated Simla, 2nd September 1887, No. 1721 G. :—

I am directed to acknowledge receipt of your No. 1147 W., dated 26th April 1887, with which you submit the estimate of establishment considered to be necessary under present conditions as to Work and Grants, for the Madras Public Works Department, together with the statement comparing this estimated cost with the cost brought out by charging Works and Revenue with the established percentage charge, as called for in this office No. 283 G., dated 5th February 1887.

2. It is observed that the total estimate of establishment amounts to Rs. 21,09,608 which is Rs. 4,13,740 in excess of the cost brought out by charging the establishment percentage on Works and Revenue. In regard to this excess it is stated in paragraph 3 of your letter under reply that the Madras Government is not influenced by considerations of present strength in maintaining so large an establishment, that this is shown by the fact of the estimate being 3½ lakhs less than that of the year 1886-87, and that His Excellency the Governor is satisfied that no further reductions can be made; that the estimate is approximately the same as that sanctioned in 1881 as the normal cost of establishment in Madras, and that the necessity for this establishment has been repeatedly insisted on in the voluminous correspondence referred to by you, and practically admitted by the Government of India.

3. In regard to this explanation I am to observe that the reduction in this estimate as compared with that of the previous year is almost entirely in temporary establishment, for which a grant of Rs. 3,00,000 was provided in the year 1886-87; and that this temporary establishment was entertained principally for works for which special grants had been provided up to the end of that year, that is to say for the tanks and for drawing up new projects. Such reductions, I am to remark, are necessary in times of restricted outlay, and in no way indicate one way or the other whether the permanent establishment is moderate or not. In regard to the comparison drawn with the establishment sanctioned in 1881, I am to observe that the correspondence referred to, so far as this Government is concerned, had regard almost entirely to the question of the scale of Engineering establishment; and the Government of India is fully prepared under this head to admit that, so far as circumstances remain as represented in that correspondence, establishment of this class should not be reduced. As, however, the estimate submitted is so largely in excess of that which, according to the usual standard, is considered sufficient, it has been found necessary to examine carefully the present circumstances of the Engineering establishment and to analyse the estimate under other heads in order to suggest for the consideration of the Madras Government the direction in which reductions may possibly be made.

4. In regard to the Engineering establishment it is observed that the original number, 81 Executive and Assistant Engineers, is still maintained; but by comparing in detail the present divisions with those of 1881 it is observed that, while three

new divisions, the Godávari central, the Nílgiris, and Presidency Workshop have been formed, six, as shown in the margin, have dropped out. If the number of Engineers provided for the new divisions and those dropped out be allowed for, there should have been a net reduction of eight officers. The projects included under each of the A to D Project divisions are enumerated in Madras letter No. 1697 W., dated 9th July 1881, and it should be explained whether or no provision is still included for those or similar projects under other divisions, and if so, how far there is any likelihood of funds being provided for these projects in the next five years.

Salem division.
A Project division.
Sangam project.
B Project division.
C ,, ,,
D ,, ,,

5. Under upper sub-establishment it is observed that the original number of 185 is maintained, whereas allowing for the difference between new and old divisions as in the preceding paragraph, the numbers should have been reduced by ten men. I am to request that this matter may be similarly explained. Further I am to point out that the staff of upper subordinates is on a much larger scale than that allowed in any other province, the average for each division being seven in Madras against two in the North-West Provinces and five in Bombay. In some divisions, it would seem, there can be no question that the number is very large: thus there are two with 12 upper subordinates, one with 11, three with 9, four with 8, and so on. On the other hand the number of lower subordinates is very small as compared with provinces of the Bengal Presidency. The attention of the Madras Government is invited to this matter, and it is requested that the necessity for this large staff of upper subordinates may be explained, and that it may be stated why the less expensive agency of lower subordinates should not to some extent be substituted as in Upper India. Such a substitution could be made by degrees without any sudden reduction. In drawing attention to this matter I am to observe that this question does not appear to have been raised in the previous correspondence; it was observed by the Madras Government in its No. 2277 W., dated 1st October 1880, paragraph 40, that "the number (of upper subordinates) which has been strictly decided on the known requirements of the several divisions calls for no remark"; and the number so recommended appears to have been accepted without further question: some further inquiry therefore, I am to say, seems at the present time necessary.

6. Strictly speaking the Government of India has no concern with the other classes of establishment included in the estimate (except the Accounts staff which is noted on below) unless their salaries exceed Rs. 250. But under present circumstances it is considered desirable to draw attention to an apparent excess in certain classes. An analysis of the office establishment comparing the present scale with that of 1881 and that previous to 1881, which is given in the appended statement, seems to show that there has been a general increase in this branch of establishment of late years, and also that the office establishment attached to divisions and sub-divisions is now on a very large scale in numbers and in cost. It is to the latter point that the Government of India would draw special attention. In addition to the large establishment provided for the several divisional offices it is observed that sub-divisional and detached offices have each their own establishment, and that even overseers are provided with clerks. Amongst the divisional offices that of the Presidency, the Godávari and Kistna, the Consulting Architect's, the Kurnool, and the several Workshops divisions all attract attention by their large office establishments. I am to suggest that the question of reducing these establishments might be taken up by the Madras Government, and that the necessity of detached offices and overseers' clerks outside the divisional and sub-divisional office establishments might be considered.

7. I am also to draw attention to the following remarks regarding the staff of accountants of the Madras Presidency and the clerical establishment of the Examiner's office. The number of accountants (53), including two temporary men for test audit work, sanctioned in Public Works Department letter No. 867 G., of 4th May 1887, was based on the requirements of 29 divisions including Coorg; as it appears that the number of divisions including Coorg has now been reduced to 27, a proportionate reduction in the staff should apparently be made and a revised scale submitted for sanction. In regard to the clerical establishment of the Examiner's office, I am to say that both number and cost appear excessive as compared with other provinces; moreover it is known that, under the special arrangements for 5th-grade accountants, the Madras Government has a larger number of accountants than allowed by rule, although at the same cost, and the extra men so obtained are almost wholly employed in the Examiner's office. Thus, instead of some 14 accountants, the Examiner's office has 27 or 28, which with the clerks bring up the strength of the establishment to the very high figure of at least 90 men. It is understood that one reason for collecting this very large establishment has been to reduce the accounts work in every possible way in the divisional offices and to throw it upon the Examiner; but it is observed that this has not tended to reduce the establishments in the divisional offices which, as pointed out in the preceding paragraph, are very large. I am to point out that, in the opinion of the Government of India, the establishment in the Examiner's office is susceptible of considerable reduction without practically impairing the efficiency of the office.

426—427
4

8. I am to request that an early reply may be given in regard to the questions raised in paragraphs 4 and 5 of this letter; and that the possibility of reduction in accordance with the suggestions of paragraphs 5 and 6 may be taken into serious consideration by the Madras Government, the result being in due course reported for information.

Enclosure.

Table B.

—	Prior to 1881.				Scale of 1881.				Present Scale.			
	No. of units.	No. of men.	Total cost.	Average per man.	No. of units.	No. of men.	Total cost.	Average per man.	No. of units.	No. of men.	Total cost.	Average per man.
Chief Engineers' offices ..	1	32	2,433	78	1	32	2,433	76	1	42	3,066	73
Joint Secretary's office ..	1	27	1,180	44	1	27	1,180	44	1	31	1,495	48
Superintending Engineers' offices.	3	33	1,240	38	6	72	2,631	37	6	84	4,161	50
Presidency Division office ..	1	8	273	34	1	16	485	30	1	17	555	32
Godávari and Kistna office ..	1	16	546	34	1	20	646	32	1	23	751	33
Consulting Architect's office.	1	6	270	45	1	6	270	45	1	11	503	46
Public Works Store's office.	1	9	305	34	1	9	305	34	1	9	465	52
First-class divisional offices.	6	48	1,638	34	7	63	2,086	33	8	72	2,284	33
Second-class divisional offices.	8	64	2,024	32	9	72	2,277	32	8	66	2,111	32
Third-class divisional offices.	3	16	441	28	5	40	1,102	28	3	25	686	27
Sub-divisional office ..	40	80	1,240	15	60	100	1,550	15	66	132	2,072	16
Detached Officers' offices ..	40	40	700	18	88	88	2,200	25	75	75	1,874	25
Overseers' offices	..	..	..	..	92	92	1,610	17	92	92	1,616	17
Examiner's office clerks ..	1	30	1,202	40	1	36	1,522	42	1	63	2,245	36
Presidency Workshop office.	..	..	..	..	..	..	..	..	1	15	405	27
Kurnool division	..	..	..	..	..	..	..	..	1	13	437	33
Nílgiri	..	..	..	..	..	..	..	..	1	9	509	55
Dowlaishweram Workshop office.	..	..	..	..	..	..	..	..	1	17	251	15

Order—dated 4th October 1887, No. 2610 W., Public Works.

The Government of India will be addressed in reply to paragraphs 4 to 6 of the foregoing letter.

2. Meanwhile Superintending Engineers will report on the following points:—

(1) Whether it would be practicable to substitute a certain proportion of lower for upper subordinates, and if so, to what extent the substitution should be carried out in each division of the several circles.

(2) Whether any reductions are feasible in existing sub-divisional establishments.

(3) Whether it is necessary to provide detached officers and overseers with clerks. If it is considered necessary, the reasons for such conclusion should be stated.

3. The question as regards possible reductions in division office establishments has already been fully considered,—*vide* Proceedings, No. 988 W., dated 15th April 1886, and No. 751 W., dated 11th March 1887. Superintending Engineers will, however, continue to give the matter their careful attention, and will bring to the notice of the Government such reductions as may from time to time appear feasible.

4. The Chief Engineer for Irrigation will report on the subject of the latter part of paragraph 4.

5. Paragraph 7 of the letter from the Government of India will be referred to the Examiner, Public Works Accounts, for careful consideration and report.

(Here enter No. 2611 W., dated 4th October 1887).

(True Extract.)

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

To Superintending Engineers.
To the Consulting Architect to Government.
" Chief Engineer for Irrigation.
" Examiner, Public Works Accounts.

Letter—to the Secretary to the Government of India, Public Works Department, dated Ootacamund, 4th October 1887, No. 2611 W.

I am directed to acknowledge the receipt of your letter, No. 1721 G., dated 2nd September 1887, relative to the estimate of establishment considered necessary for the Madras Public Works Department.

2. In reply to the observations in paragraph 4, I am directed to state that appendix A to this office letter, No. 1697 W., dated 9th July 1881, included thirty divisions, while appendix D to my No. 1147 W., dated 26th April 1887, shows twenty-seven divisions as now existing. The present number is therefore three less than that of 1881, but this reduction is more apparent than real as regards executive staff. Owing to the reduced grant for establishment allotted for 1887-88, it was found necessary at the close of 1886-87 to double up several divisions for purposes of office and accounts work, but with respect to construction some of the amalgamated divisions virtually remain two separate divisions. Thus, the Ganjam division includes the Rushikulya project, which is under a separate Executive Engineer, as well as the works on one large zemindari estate and several smaller ones, lately taken over from the Court of Wards; the Kistna Eastern division requires an additional Executive Engineer and an Assistant for charge of the important works in the recently closed Gudiváda division, and the Periyár division has just been opened. It may be said, therefore, that there are still thirty executive charges, while in addition there are four parties of the Tank Restoration Scheme, each of which requires an Executive or Assistant Engineer, and also the head office of the Scheme, to the charge of which an Executive Engineer has been posted in lieu of the Superintendent of Works formerly allowed. It will thus be seen that the requirements of the department, with respect to executive staff, have increased rather than decreased since 1881.

3. It may be argued that tank restoration being outside the ordinary work of the divisions, should be provided for by the appointment of temporary officers, but it is intimately connected with the work in the divisions. It is advisable to employ on it officers who are experienced in tank irrigation, and, as each river basin taken up by a Tank Restoration Survey party is taken out of the hands of the divisional officer and thus virtually reduces the extent of his charge, it allows of the employment of some of the general staff of the department on this work. The work moreover must take so many years to complete that it cannot be considered temporary.

GC-427

4. With reference to the latter part of paragraph 4 of your letter, I am to state that a further report will be made regarding the projects formerly included in the late A to D Project divisions, but meanwhile I am to invite attention to this office letter, No. 1878 W., dated 26th July 1886, giving a brief retrospect of the work done by those divisions up to the time of their closure, and intimating what had been, and what was intended to be, done with respect to the several projects.

5. The point raised in the first sentence of your paragraph 5, relative to the upper subordinate establishment, appears to be sufficiently answered in my paragraph 2 above. If the number of executive divisions be taken as thirty instead of twenty-seven, the average number of subordinates in each division would be reduced to six. That the average is higher in Madras than in Bombay and the North-West Provinces can only be explained by once again recurring to the different conditions of this Presidency; the large area covered by executive charges, the scattered nature of the works, and consequent difficulty of supervision. The two divisions shown in appendix D to my letter of 26th April last, as having twelve subordinates each, are Coimbatore and Madura. The former is of very large area, and includes the old Salem division and the Barur project. The Madura division has a large staff at present because in it are going on the construction of the Vaigai bridge and the Cumbum-Gúdalúr road, two large Local Fund works, which have been handed over to the Public Works Department for execution. Each of these two divisions moreover has a party of the Tank Restoration Scheme working in it. Similarly, the Kurnool division, with eleven subordinates, includes the Kurnool canal and the old Kurnool division, as also a party of the Tank Restoration Scheme. It seems needless to go into further explanation, but the other divisions with nine and eight subordinates are all heavy divisions, covering large areas.

6. The question of substituting lower for upper subordinates will receive careful consideration, and will be reported on hereafter.

7. With regard to divisional office establishments, I am to state that the question of effecting economies therein has not been lost sight of by this Government. The matter was carefully gone into in the summer of 1886, in connection with letter from the Finance Committee, No. 1, dated 22nd March 1886. Again, at the close of the year 1886-87, when reduction became imperative owing to the reduced grant for establishment for 1887-88, careful inquiries were made as to the scale of office and inferior establishments necessary for divisions and sub-divisions. Beyond discharging all temporary establishments however, it was not found practicable to effect material economy. Indeed the general complaint was that the divisional offices were as a rule undermanned, and this Government are still receiving applications from various divisions for assistance in the shape of temporary hands. The heavy work entailed on divisional and sub-divisional office establishments is mainly due to the great mass of accounts which must be rendered monthly in obedience to rules laid down by the Government of India. The possibility of reducing clerical and accounts work has received the earnest attention of the Chief Engineer and of this Government, since the beginning of 1884, and numerous suggestions on the subject have been received from officers of the department. With regard to clerical work, several reforms have been effected by the introduction of printed forms, &c., but as regards accounts, the result of nearly every inquiry has been to show that the number of forms, vouchers, &c., cannot be reduced without lessening that amount of control over expenditure which is prescribed by standing orders of the Government of India. The monthly accounts of the majority of the divisions systematically reach the Examiner's office long after due date, and the constant excuse which Executive Engineers make is that their office establishments are too weak to cope satisfactorily with the work. That this subject has received earnest attention will be seen from this office letter, No. 2247 W., dated 12th September 1884, in reply to which the Government of India stated that steps should be taken to increase establishments to admit of punctuality being attained. This has been done in some cases, while in others extension of time for the submission of accounts has been allowed, but the Examiner still reports monthly that a large

number of the accounts are late. In connection with this subject, I am to forward for perusal copies of the proceedings marginally noted, and to state that the question continues to receive consideration. At the present time this Government are inquiring into a scheme submitted by a Superintending Engineer involving important changes in the system of compiling the monthly accounts, but though no great results are likely to be effected, so far as at present can be seen, some of the points which promise to reduce office work will probably before long form the subject of correspondence with the Government of India.

No. 721 W., dated 23rd March 1885.
,, 1360 W., ,, 21st June 1885.

8. With regard to the necessity of allowing clerks for detached officers and overseers, I am to say that a further report will be made, but that without clerical aid it will be impossible for subordinates, most of whom have considerable distances to travel, to devote sufficient time to their field duties.

9. The subject of paragraph 7 of your letter will be referred to the Examiner, Public Works Accounts, for careful consideration, and the result will be reported in due course.

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

Exd. J. Moss.
Spare Copies

426.427
6

GENERAL.
ESTABLISHMENT.

Govt. of (1887) Madras.

PUBLIC WORKS.

Dated October, 4th.

Recd. Encl.

G.O., 4th Oct. 1887, Nos. 2610, 2611 W.

OCTOBER.

617 W

Madras Public Works Department

Submitting explanation relative to establishment charges in connection with the —.

426-427/7

Note by the Chief Engineer for Irrigation

No 11. E.W

Encl Statt

The accompanying statement showing the forecast of expenditure on Irrigation projects during the five years ending with 1892-93 is submitted with reference to para 4 of G.O No 2610 W. dated 4th October 1887.

2 The statement includes all projects shown in Appendix D of letter to the Govt of India No 1697 W dated 9 July 1881 except the Potinghy ghaut road in the Vizagapatam Dt for which the necessary particulars are not available in this office. The work may therefore be added in the statement in the office of the Chief Engineer P.W.D.

3 For the Rushikulya project, the only work sanctioned for execution under Protective works, revised estimates are under preparation, the sanctioned rates for work being insufficient and some of the designs being found to require alteration.

4 All the projects sanctioned in connection with the systems under 22 Minor works and Navigation are in progress except the Ganjam Gopalpur canal the execution of which has owing to scarcity of labor been deferred until the Rushikulya project is far advanced towards completion. The Government of India having

withheld

ntil the grant in aid from Imperial funds [illegible]
to the Buckingham Canal for next year, only the
robable amounts which may be spared from
Provincial funds for expenditure on the canal
ave been entered in the statement.

The forecast of expenditure on Major
roductive works is based on the statement printed
ith G.O. No. 617 I dated 11th October 1887 and forwarded
the Government of India with endorsement [illegible]
odified with reference to the current year's revised
timates, next year's budget estimates and probable
rospect balance for each of the works.

The project divisions having been
bolished, no further progress with the investigation
f projects has been made except that the estimates
r the Upper Bellary and those for the Calinga-
royen Channel project have been received in
is office and are under examination. The former
roject which will require considerable revision
nd also more field work and will probably
e classed under Protective works, may be commenced
1889-90 with an annual expenditure of about
wo lakhs of rupees. The Calingaroyen channel
mprovements may also be commenced in the
ame year, should funds be available.

The Lower Coleroon anicut project for
hich estimates are still with the Chief Engineer
[illegible] may be taken up as soon as
funds

4X-42/8 p2

funds can be found.

8 It is improbable that funds will be found for any large project other than those referred to above during the next five years unless establishments are granted for investigation or unless a necessity arises for famine relief.

Chepauk
17th January 1888

M. R. [illegible]
Colonel R.E.
Chief Engineer for Irrigation

To
The Chief Engineer
Public Works Department

Statement showing the forecast of Expenditure on projects during the five years ending with 1892.93

District	Name of project	Division to which each project was attached as shown in appendix B to letter to the Govt of India No 1697 W dated 9 July [illegible]	Brief Explanation of each	Amount of estimate	Outlay to end of 1886.87	Grant for 1887.88	Probable expenditure during 1888.89	1889.90	1890.91	1891.92	1892.93
	3		35 Protective Works Irrigation								
Ganjam	Rushikulya project	D Project	The project is intended to utilize the waters of the small rivers Rushikulya and Mahanadi for the irrigation of a tract of country lying between the town of Aska and the sea, and provides for an anicut on the Mahanadi with a canal from it to the Rushikulya, so as to increase the supply of the latter, and a similar work on the Rushikulya where the Doab canal runs in with channels to the tract to be irrigated. It includes also the formation of two reservoirs on the principal affluents of each river. The area to be irrigated is 120000 acres which is estimated to yield an annual revenue of Rs 219000 or a net revenue of Rs 144,312 after paying working expenses. The estimates for the project which were sanctioned by the Secretary of State in April 1883 are being revised, the sanctioned rates being insufficient and certain alterations being found necessary in the designs for works. (P. Mly No 500 I. dated 23 June 1883)	2605286	550190	211,200	200,000	300,000	300,000	300,000	300,000
			43. Minor Works and Navigation								
North Arcot	Palar Anicut	-	This project provides for works required for the completion of the Palar anicut system and for the full utilization and regulation of the available supply of water. The project is estimated to irrigate 68,700 acres of first and 34,000 acres of second crop, and to yield a net revenue of Rs 93,720, or 3.88 percent on the estimated outlay. The estimates for this project were sanctioned by the Secretary of State in December 1884. (P. Mly No 85 I. dated 29th January 1885)	18,94,915	1696,726	48,767	67,500	81,922	"	"	"
South Arcot	Pelandorai Anicut	-	This project includes provision for enlarging the storage works. The project is estimated to irrigate 12,000 acres and yield a net return of 8.98 per cent on the estimated outlay. The estimates for this project were sanctioned by the Govt of India in June 1884 (P. Mly No 626 I. dated 4th July 1884)	405,000	391,583	7460	5000	957	"	"	"
Chingleput	Madras Water Supply and Irrigation Extension Project	-	This project has virtually been completed with the exception of a few distributaries from the Red Hills tank required for the extension of irrigation for which the —								

4

426.427 / 11

Statement showing the forecast of Expenditure on projects during the five years ending with 1892-93.

426422/22

6

426422/12

District	Name of project	Division by which each project was attached as shown in Appx B to letter to the Govt of India No 1699 W dated 9 Feby 1888	Brief Explanation of each	Amount of estimate	Outlay to end of 1886-87	Grant for 1887-88	Probable expenditure during 1888-89	1889-90	1890-91	1891-92	1892-93
5			detailed estimates are under revision. The revised estimates for this project were sanctioned by the Secy of State in August 1882 (P Mly No 340 I dd 21st April 1883)	15,80,995	15,15,827	.	12,500	17,668	.	.	
Nellore Chingleput South Arcot	Buckingham Canal	Buckingham Canal Divn	Completion estimates for the Buckingham Canal including provision for constructing flood gates and diversions wherever necessary were sanctioned by the Secretary of State in January 1884 (Vide P Mly No 195 I dd 16th February 1884)	86,12,000	62,58,456	3,01,141	222,000	222,000	222,000	222,000	222,000
Ganjam	Ganjam Gopalpore Canal	A. Project	This canal will be a continuation of the one from the Chilka lake to Ganjam which was originally constructed as a famine relief work. The port of Ganjam which was once important was subsequently owing to its unhealthiness superseded by Gopalpore 12 miles to the south. The continuation of the canal is therefore considered necessary. Estimates for the work were sanctioned by the Govt of India in April 1885 (Vide P Mly No 45 I dated 16th May 1885). The Secretary of State remarked that as the ultimate return is only a little more than 1½ percent on the estimated capital outlay and as it is not proposed to commence the project until the completion of the Rushikulya project a decision on the project might be postponed for the present. Vide P Mly No 79 I dated 16th September 1885)	431,000	17,413	.	.	.	.	.	.
			Total for 43 Minor Works & Navigation	129,23,910	98,80,085	3,57,318	3,07,000	3,22,567	222,000	222,000	222,000
			45 Civil Works								
Vizagapatam	Road from Salur to Koraput and Jugdulpore in Bastar Via Potinghy	A. Project	The Potinghi ghat has practically been completed – the work for two bridges only having to be put up.	4,51,581	4,34,502	10,000	20,000				
			The continuation of the road from Potinghi to Koraput is in active progress. The line from Koraput to Jagdalpur is being surveyed and levelled but construction will probably not be commenced until the section to Koraput has been completed	2,81,940	30,569	50,000	50,000	50,000	50,000	50,000	1371
				7,38,521	465161	60000	70,000	50,000	50,000	50,000	1,371
			48 Irrigation								
Godavari	Godavari Delta	D. Project	Estimates for the thorough completion of the whole system of the Godavari delta works including large improvements to works in the central section were sanctioned by the Secretary of State in August 1882. Vide P Mly No 854 I dd 23 October 1882 the ultimate extent of irrigation being 6 hundred thousands of acres and the anticipated return 12.7 percent on the Capital outlay	11089332	10471348	210971	183,400	109,100	75,580	38933	.

426 427 / 22

Statement showing the forecast of Expenditure on projects during the five years ending with 1892-93.

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426 427 / 13

District	Name of project	Division to which each project was attached as shown in appendix B to letter to the Govt of India No 1897 [illegible] dated 9 [illegible] 1881	Brief Explanation of each	Amount of estimate	Outlay to end of 1886-87	Grant for 1887-88	Probable expenditure during 1888-89	1889-90	1890-91	1891-92	1892-93
Kistna	Kistna delta	D. Project	Completion estimate for the Kistna delta including provision for the improvements required for the extension of irrigation and for rendering the existing works more efficient were sanctioned by the Secretary of State in Feby 1882. Vide P. Mly No 292 I dated 28th March 1882. The ultimate extent of irrigation under this system is estimated at 475,000 acres and the net return 8.22 percent on the total estimate of direct and indirect charges	13919784	7400966	535272	496,000	560,000	560,000	500,000	500,000
Nellore	Pennar Anicut		Completion estimate for the Pennar anicut system including provision for the improvements required for rendering the existing works more efficient were sanctioned by the Secretary of State in April 1885. Vide P. Mly No 526 I dated 19th June 1885. This system is estimated to irrigate 69385 acres on the South of the Pennar and the ultimate net return anticipated is 7 percent on the total direct and indirect outlay	1612789	1504250	40,080	50000	18459			
	Sangam Anicut		The Sangam anicut which is about 20 miles above the Pennar anicut is intended to irrigate 94,000 acres on the north of the Pennar the southern portion being irrigated by the Pennar anicut at Nellore. The supply in the river being intermittent water is stored in two large reservoirs known as the Kanigiri and Duvur reservoirs. The net return anticipated is 5.26 percent on the estimated capital outlay. This project which was sanctioned by the Secretary of State in February 1881 is nearing completion. The amount sanctioned having been found insufficient to complete the project revised estimates amounting to Rs 30 lakhs were submitted to the Govt of India with P Mly No 393 I d/1st July 1887, but sanction to these estimates has been deferred pending submission of revised forecast statements of revenue and expenditure. These will be submitted as soon as the information required from the Revenue Dept is received	2896437	2718332	128,162	115000	58,506	20000		
Salem	Barur Tank project	B. Project	This work was commenced as a Relief work during the last famine. The project provides for an anicut across the Poiniar river, supply Channel to Barur tank, enlargement of the tank and its irrigation Channels and								

Statement showing the forecast of Expenditure on projects during the five years ending

District	Name of project	Designation by which each project was attached as shown in appendix B to letter to the Govt of India No 1697 W dated 9 July 1886	Brief Explanation of each	Amount of estimate	Outlay to end of 1886-87	Grant for 1887-88	Probable expenditure during 1888-89	1889-90	1890-91	1891-92	1892-93
9			and for head sluices to existing channels. Revised estimates for this project were sanctioned by the Secretary of State in February 1886 Vide P. Mly No 289 I d/ 3d March 1886	400,000	266,077	41,739	45,000	46,384	·	·	
Tanjore	Cauvery & Vennar regulators		Estimates including provision for constructing the Cauvery & Vennar Regulators and for excavating a new head to the Vennar were sanctioned by the Secretary of State in July 1883 Vide P. Mly No 778 I dated 21st Septr 1883. The works have nearly been completed	1662,925	1652,670	10,000	·	·	·	·	·
Madura	Periar project	D Project	The object of this work is to utilize a portion of the superabundant rainfall on the western slopes of the ghauts for the purposes of irrigation in the District of Madura to the east of the watershed where the rainfall is comparatively scanty and often very uncertain and where famine has in consequence been severely felt on more than one occasion. It is proposed to accomplish this object by diverting to the eastern side of the ghauts the waters of the river Periar which rises on the western side traverses the native state of Travancore and falls into the sea near Cochin. The headworks for the catchment of the water are to consist of a dam made of concrete 155 feet in height above the deep bed of the river. From the reservoir thus formed the water will be passed by a tunnel 6650 feet in length cut through the watershed ridge into the Soorolly down which it will flow into the Vaigai from which stream, it will be distributed over the land by means of weirs and distributary channels. The area expected to be irrigated by this project is 101,000 acres and the estimated gross revenue amounts to Rs 6,28,214. After deducting maintenance charges (calculated at Rs 1.25 per acre irrigated) amounting to Rs 1,25,400 a net revenue of Rs 502,814 per annum or 7.80 percent on the estimated Capital Outlay of Rs 6439,913 will it is anticipated, be derived. The estimates for this project which were submitted to the Govt of India in April 1883 were sanctioned by the Secretary of State in September 1884 and the sanction was communicated by the Govt of India in May 1886 Permission was accorded to the commencement of the project during the current year. Owing to financial pressure it was not commenced earlier.	61,85,000	·	2,37,250	6,00,000	10,00,000	10,00,000	10,00,000	10,00,000

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Statement showing the forecast of Expenditure on projects during the five years ending with 1892-93.

District	Name of project	Division to which each project was attached as shown in appendix B to letter to the Govt of India No 1697 W dated [illegible]	Brief Explanation of each	Amount of estimate	Outlay to end of 1886-87	Grant for 1887-88	Probable expenditure during 1888-89	1889-90	1890-91	1891-92	1892-93
11 Tinnevelly	Srivaikuntham Anicut		The Srivaikuntham anicut system for which completion Estimates were sanctioned by the Secretary of State in August 1883 (Vide P.M.G. No. 863 I dated 3rd November 1883) has been almost completed. The ultimate net revenue is estimated at 7½ per cent on the Capital outlay.	13,61,520	13,29,567	13,776	10,600	"	"	"	"
			Total for 48 Irrigation	39,12,77,87	2,53,44,010	12,17,250	15,00,000	17,92,449	16,15,590	15,38,933	15,00,000
			Projects under investigation.								
Ganjam	Mallada Tampara project		This project provides for constructing an anicut across the Kharkorpaur two miles above its junction with the Rushikulya, improving the existing channels and excavating new ones and embanking the Tampara or natural lagoon. The plans and estimates which were returned to the Superintending Engineer for revision, are reported to be under consideration.	30,700							
Godavari	Anamalanka project		This project comprises the construction of a tank or reservoir, storage capacity 4420 millions of cubic feet, length 7½ miles, greatest width 4½ miles and area 9½ square miles, near the ruined village of Anam lanka in the Yerranagudiem Talug. It is 6 miles north of Nallacheri, a large village on the trunk road betw Ellore and Rajahmundry. The site is feverish in wet weather. It will be supplied from the Yerracalva a perenn river which gets its principal supply from the South Wes Monsoon and is said to be valuable when the North East Monsoon fails. In the dry weather it runs only 6 inches deep. The reservoir has been proposed to act as a flood moderator to the drainage of the Yerracalva which enters the western section of the Godavari delta under the Nandamur aqueduct at the head of the Ellore Canal and several times endangered the safety of some of the delta Canals. The reservoir is intended to irrigat 45,000 acres and also at times to supplement the sup of the delta canals. The estimates for the project prepared Captain Dorward R.E. in 1873 amounted to Rs 8,14,000, exclud land compensation which was subsequently ascertained t amount to Rs 77,800, making a total of Rs 8,91,800 for wo The estimates required revision; but further investigation has been deferred								

Statement showing the forecast of Expenditure on projects during the five years ending with 1892.93.

District	Name of project	Division to which each project was attached as shown in appx B to letter to the Govt of India No [illegible] W dated 9 [illegible] 1884	Brief Explanation of each	Amount of estimate	Outlay to end of 1886.87	Grant for 1887.88	Probable expenditure during				
							1888-89	1889.90	1890-91	1891 92	1892.93
			deferred till the Godavari delta works have been completed. These works are now far advanced towards completion and the further investigation of the Annoma-lanka project may be undertaken as soon as an officer is available.								
Godavari	Boat Canal from Dummagudiem to Bhadrachellam		An estimate amounting to Rs 4,53,840 subsequently) corrected (G.O. No 406 W of the 19th October 1878) to Rs 455320 was sanctioned for a Canal to start from above the present tail locks at Gongole or new Dummagudiem and to run for more than one third of the distance along the Taravagu; a stream or water course which falls into the Godavari near Sitampetta. Thence it was to follow the line originally chosen for the long canal of the Upper Godavari navigation scheme which has been already excavated to a short distance above Bhadrachellam where a flight of locks would drop it into the river at a spot favorable for the lock construction as also for the navigation. In 1882 it was considered desirable that an alternative line for the Canal between new Dummagudiem and Seetharampet which would run parallel to and at a short distance from the river throughout should be investigated. With letter No 3029 C.S. dated 4th January 1884, the Superintending Engineer, First Circle sent an estimate for this alternative line. The estimate amounted to Rs 250000 including Rs 5000 for a flood bank. The excess of the alternative over the original line was approximately ascertained to be Rs 17,000. In his letter of the 4th January 1886, the Superintending Engineer condemned the execution of the Canal on either line except as a relief work in case of famine								
do	Samulkot Tuni Canal		The extension of the (high level) Samulkot Canal to Tuni on the borders of the district was proposed by Major (now Major General) Cotton. Its length would be 37 miles. Major Cottons quantities at the rates of 1877 amounted to Rs 4,00,000. The Local fund Board agreed to contribute one third of the estimated cost. The project was partly investigated by the "A" project division and further investigation was stopped on the abolition of that division. The Survey and levels taken are with the Superintending Engineer, First Circle. The canal will have to cross the Yellera river not by an aqueduct but								

Statement showing the forecast of Expenditure on projects during the five years ending with 1892-93.

426.427/22

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426.427/17

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District	Name of project	Division to which each project was attached as shown in appendix B to letter to the Govt of India No. [illegible] dated 9 July 1888	Brief Explanation of each	Amount of estimate	Outlay to end of 1886-87	Grant for 1887-88	Probable expenditure during				
							1888-89	1889-90	1890-91	1891-92	1892-93
			but by a weir with flood gates on either side of the river. Colonel J. O. Hasted R.E. has placed on record that, should this project be taken up again, it must be considered whether a tidal canal should not be preferable to this Canal which it might be difficult to supply.								
Nellore	Aduvapillai tank restoration			15,000							
	Jimalapady tank Do		Suggested in 1869 Nothing since done	20,000							
	Gandipalem Do Do			1,00,000							
	Gandicotta reservoir		Proposed. Nothing done	..							
Cuddapah	Suggalian project		Plans and estimates prepared, are now in the office of the Chief Engineer for Irrigation, they will probably require considerable revision.	7,03,400							
	Papaghni anicut		Proposed nothing done								
	Peddappasala channel*		Plans and estimates prepared but not yet submitted	34,860							
	Cheyair embankment		Estimates have been lately returned for revision	47,750							
Kurnool	Jalary cheruvu tank restoration		Preliminary report received. Nothing since done	20,00,000							
	Venkatareddi palem tank restoration		Preliminary report made in 1876. Nothing since done	46,000							
	Arveed tank restoration		Nothing done	20,000							
	Kalavatala tank project		Partially investigated in 1871. nothing since done	50,000							
	Durgala project		Partially investigated in 1877. Nothing since done								
	Jaikoor reservoir		Partially investigated. Nothing since done								
	New tank South of [illegible]										
	Gorladinne tank										
	Tank at Markapur Taluq		Proposed nothing done.								
	Great Kistna reservoir										
	Kurnool Canal diverting at Sangadaucheruvu		Estimates are said to have been prepared but not yet received in the office.	60,000							
	Kurnool Canal distributaries		Plans and estimates are under preparation	4,00,000							
Bellary	Hindupur reservoir project		Preliminary investigation of this project also was made by Mr Garrett. The Superintending Engineer, Third Circle considers that it may possibly pay 2 per cent, it								

Statement showing the forecast of Expenditure on projects during the five years ending with 1892.93.

District	Name of project	Divisions to which each project was attached as shown in appendix B to letter to the Govt of India No. 1697 dated 9 July 1884	Brief Explanation of each	Amount of estimate	Outlay to end of 1886.87	Grant for 1887.88	Probable expenditure during 1888-89	1889-90	1890-91	1891-92	1892-93
17			it is eminently unsuitable as a relief work and as a Protective work, its effect would be insignificant								
—	Roddam project		Preliminary investigation of this project was made by Mr Garrett when he was in charge of the "C" project Division. The estimates for masonry works may be allowed to stand but the channel portion will require revision. The Superintending Engineer, 3rd Circle, estimates the net return at a little over 2 per cent, would not be a good relief work, but both financially and as a relief work it is to be preferred to the Hindup Project. If required it could be submitted in a complete shape in 3 months								
6	Bookacherla project		Estimates returned to Supg: Engineer in 18 nothing since done	1395040							
	Potalacounta tank project		Partially investigated prior to 1877; nothing since done	16,000							
	Mylapore Auggery		Do. Do. Do.								
	Upper Bellary project		Plans and estimates of a modified project to irrigate 50,000 acres and to supply the town of Bellary with fresh water. Requires considerable revision. With adequate establishment could be completed in 3 months.	34,52,418				5,00,000	5,00,000	5,00,000	5,00,000.
Salem	Marandahalli project		Plans and estimates received and await examination in this office, will not be remunerative but would do as a relief project	469878							
	Vaniar reservoir		The project promises a good supply of w which will be fully utilized, but looking to the large capital outlay required, it is not likely to prove remunerative; but it may be put in hand if the necessity famine relief arises. Plans and estimates have been revised and are waiting examination in this office	1707427							
	Kistnagiri reservoir		A preliminary report was made and project was roughly estimated to yield a return of 5 per cent on direct charges by irrigating 56,000 acres. The preparation detailed plans and estimates was authorized, but no progress has been made as the "B" project division was abolished	40,00,000							
	Goodamally reservoir		Site examined and favorably reported on in 1878; nothing since done								
Salem and Coimbatore	Nerinjapet project		Abandoned.								
B	Bhavani reservoir		Project partially worked out; left that it can be taken up without delay when necessity arises.								

Statement showing the forecast of Expenditure on projects during the five years ending with 1892-93.

District	Name of project	Division to which each project was attached as shown in appendix B to letter to the Govt of India No 1697 [illegible] dated 9 [illegible]	Brief Explanation of each	Amount of estimate	Outlay to end of 1886-87	Grant for 1887-88	Probable expenditure during				
							1888-89	1889-90	1890-91	1891-92	1892-93
Coimbatore	Allamady reservoir		Proposed; nothing done.								
	Pugalur Channel		Abandoned in favor of the proposed extension of the Calingaroyen channel, plans and estimates for which, are now under examination in this office								
	Calingaroyen Channel		Plans and estimates are being examined in this office	8,50,000	-	.	.	174,000	283,000	233,000	160,000
	Channel from Bhavani to Noyel		Nothing done since 1879. The extension of the Calinga-royen channel may be taken as a ubstitute for this.								
Chingleput	Narayanavaram river irrigation extension project		In 1869-70 an assistant Engineer, Mr ell, was employed in investigating the capabilities of this er. The water supply was found precarious, and me of the projects proposed in connection with it were ely to be remunerative. The projects were therefore aid aside until some officer might be available to see hether any modification of Mr Bell's proposals or ny alternative arrangements were feasible. Mr Bell's proposals were (1) Pichatoor project for the construction a tank to hold 340 millions of C yards of water at a t of Rs 50,000, the return being estimated at 3 per cent pply channel (2) Ootoocollah project for widening the surplus of the enlarging the tanks and carrying on ukari kukam-latter to the Sirujagram, Polabakam, bakam tanks. pared No estimates for this project were tructing an (3) Vadamadurai tank project for k bund anicut across the river raising the f the Panambakkam two yards and cutting a channel from k was estimated and Sevanarambedu tanks. This project lding a revenue to cost Rs 1,61,000 to irrigate 2171 acres of Rs 13,108. (4) A channel on the left bank of the s to feed the Chumanikal stream, to cross it by anicut and to supply 18 or 20 tanks with an ease of been revenue of Rs 13,000 or 14,000. Nothing since done.								

District	Name of project	projects were attached as shown in appendix B to letter to the Govt. of India No [illegible] W dated [illegible]	Brief Explanation of each	Amount of estimate	Outlay to end of 1886-87	Grant for 1887-88	Probable expenditure annually				
							1888-89	1889-90	1890-91	1891-92	1892-93
[illegible]	100										
Chingleput	Tamarapakam anicut channel		In G. O. No 307 W. dated 27th January 79, the survey was ordered to be discontinued, and observations already taken to be recorded for uture use as the work was not likely to be emunerative								
North Arcot	Cheyair river		Besides the existing anicut on the heyair river the surveys of two more projects connected with the same river were reported in 1869 to have advanced to a stage which would enable a skilful officer to use them as a basis for a general design for the works (vide para 24 of the note printed with G.O. No 247 dated 27th January 1869) No investigatio of the projects has been made								
South Arcot	Authose project		The object of this project was to supplement the supply of certain tanks mostly rainfed by taking off a supply of water from the north branch of the Cuddalam river by means of an anicut near Collater in the Tirukoilur taluq. In 1872 Executive Engineer, Mr. Bell, prepared plans and estimates which were returned for further investigation and revision with Memo: No 373 d/ 9th June 1873. Nothing has been since done.								
	Tellagacherry Channel project		This project comprises an anicut over the Trimantamoottaruddy with two main channels one on the north bank 7½ miles long supplying 6 tanks another on the south bank 8¼ miles in length and intended to afford direct irrigation there being no tanks or other means for storing supply. The project was roughly estimated to cost Rs [illegible] to irrigate 3000 cawnies of land yielding a revenue of Rs 15,000. A survey establishment was employed on the project in 1873, but the plans and estimates were not submitted. The project was allowed to lie over until the requirements of existing works were attended to and the Establishment required to complete the investigation was available								

426·422
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Districts	Name of project	project was attached as shown in appendix B to letter to the Govt of India No [illegible] dated [illegible]	Brief Explanation of each	of estimate	to end of 1886-87	for 1887-88	1888-89	1889-90	1890-91	1891-92	1892-93
South Arcot and Tanjore	Lower Coleroon Anicut project	23	The plans and estimates completed by Executive Engineer, Mr Lobb, are now under the consideration of the Superintending Engineer, [illegible] Circle.								
Tanjore	Drainages		Under investigation by the Superintending Engineer.								
Trichinopoly	Vengur Channel project		Thoroughly investigated and abandoned. Vide G. O. No 644 I dated 14th August 83.								
	Kodunthoray tank project		The project provides for restoring the tank and its means of supply to a state of efficiency. The project was submitted by the District Engineer, January 1876 and was returned to him with memo 187 C dated 11th June 1877 for revision.								
Tinnevelly	Papanasanam reservoir		Site inspected by the Chief Engineer for Irrigation and proposal abandoned.								
South Canara	West Coast Canals		Estimates under preparation								
			Total for projects under investigation					6,74,000	7,83,000	7,33,000	6,60,000

Chepak
17 January 1888

Mead
Colonel, R.E.
Chief Engineer for Irrigation

[illegible]

PUBLIC WORKS DEPARTMENT.

No. 426 W.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

UNDER date the 6th Feby 88

READ the following

From the Ch. E. for Irrn. No. 11 Erl. dd 17-1-88.

25

Ordered to be forwarded to the Govt of India.

H.G. No. W. dd

To the Ch. E. for Irrn.
– Govt [illegible]

To the Secy to the Govt of India
P.W.D.

Sir,

With reference to para [illegible] of your letter No. 1721 I. dd 2 Sept 1887, I am directed to forward the accy. copy of a note by the Ch. Engr. for Irrigation, with a statement

*Pg. No 426 W dd 6-2-88

Statement showing the forecast of expenditure during the ~~[illegible]~~ next five years on the projects enumerated in this office letter No 1657 – 379 [illegible] 1881. The figures relating to the Potinghi [illegible] & the Potinghi-Korapur road have been filled in by the office of the Chief Eng. P.W. Dept.

8.2.88

[illegible]

[illegible] [illegible]

Car

3.2.88

5.2.88

426-427
24

7/4

[illegible] PUBLIC WORKS

G.O. 6th Feby 1888 No. 626/427 W.

~~Irrigation~~ Projects (Works)

Statement showing forecast of expenditure on — during the five years ending with 1892–93. The — issued to be forwarded to the Govt of India.

~~Irrigation~~ Projects Works

Statement showing forecast of expenditure on — during the five years ending with 1892–93. Forwarding copy of note by the Ch: Engr for Irrigation with a — [illegible] remarks.

502/12 70/4

30/[illegible]

180/7/2