Public Works (1896) Department.

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G.O., No. 1032-33 I

DATED 5th December
1896

[Despatch Abstract.]

Administration Report. Reviewing the — of the P. W. Department Irrigation Branch for 1895-96 and directing that copies of the report & Govt Proceedings be forwarded to the Secy of State.

Administration Report: Forwarding Proceedings reviewing the — of the P. W. Department, Irrigation Branch for 1895-96.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper:—

Administration Report of the Public Works Department, Irrigation Branch, for 1895-96.

No. 216 I.

Submitted to Government.

The submission of the report, which was due with the Government of India on the 30th November 1896, was unavoidably delayed owing to the late receipt of the final accounts of the Examiner, Public Works Accounts, which reached this office only on the 21st idem.

CHEPÂK,
1st December 1896.

(Signed) F. J. WILSON,
for Chief Engineer for Irrigation.

ORDER—No. 1032 I., dated 5th December 1896.

The report deals with 10 "Major works" and 26 "Minor works" for which Capital and Revenue Accounts are kept, and numerous other irrigation and agricultural works individually small, for which such accounts are not kept. Nine of the "Major works" are classed as productive and one, the Rushikulya project, as protective. All the "Major works" except the Periyár project were in operation and the construction estimates of seven of these have been closed.

2. Of the 26 "Minor works" 22 are irrigation systems and 4 are tidal canals intended for purely navigation purposes. With the exception of the Munnyeru, Pondapad and Sagiléru projects and the Ganjám-Gopalpore tidal canal, the whole of the above are in operation, and of these the construction estimates have been closed except in the following three cases: the Buckingham canal, the Poiney and Lower Coleroon anicut systems.

3. The capital outlay incurred on the Major and Minor works during and up to the end of 1895-96 was as follows:—

—	Number of works.	During the year 1895-96. Works.	Establishment.	Tools and plant.	Less receipts on Capital account.	Total direct charges.	Indirect charges.	Total direct and indirect charges.	Total direct and indirect charges to end of 1895-96.
1	2	3	4	5	6	7	8	9	10
Major Works.		rs.	rs.	rs.	rs.	rs.	rs.	rs.	rs.
Protective Irrigation works (account head, 35)	1	1,92,432	38,392	— 3,595	762	2,26,477	27,727	2,54,204	42,65,058
Irrigation works not charged to Revenue (account head, 49) ..	9	10,69,293	2,38,789	36,915	2,389	13,42,708	45,965	13,88,673	6,44,10,823
Minor Works and Navigation.									
Works for which Capital and Revenue Accounts are kept (account head, 43)	(a) 24	4,88,422	1,05,908	11,564	1,392	6,04,502	25,739	6,30,241	1,66,68,836

(a) Exclusive of the Ganjám Minor works system and the Védáranniyam canal for which complete capital accounts up to end of 1895-96 have not yet been prepared.

4. Under Major works, the capital outlay was incurred chiefly on the Kistna delta, Periyár and Rushikulya systems.

On the Kistna delta system the capital outlay during the year amounted to Rs. 5,56,299 including indirect charges, and was incurred on various improvements to head works, canals, distributaries and drains. The piers of the new head sluice intended to replace the existing head sluice at Sitanagaram which was badly cracked were built up to springing level.

The capital outlay on the Periyár system was Rs. 7,51,403 including indirect charges. The main dam was completed with the exception of the tower on the right flank. The water-shed tunnel and the left bank escape were also finished. In the Madura division 108 miles of main and branch canals were completed to the end of the year under review. The Periyár works were formally opened on the 10th October 1895 by His Excellency Lord Wenlock, G.C.I.E., late Governor of Madras, but as the supply was not maintained continuously, no revenue has been credited to the project.

The capital outlay on the Rushikulya system was Rs. 2,54,204 including indirect charges. The progress of work was satisfactory, the Russellkonda reservoir together with its feeder—the Gulleri channel—the incomplete works of the Rushikulya canal and most of the distributaries having been completed.

Under Minor works, the principal outlay was incurred on the Munnyeru and Sagiléru projects and the Buckingham canal.

On the Munnyeru project the capital outlay was Rs. 1,22,132 including indirect charges. The anicut and under sluices were completed, the main channel, the head sluice and several other masonry works were in progress.

On the Sagiléru project the capital outlay was Rs. 1,31,226 including indirect charges. The anicut, head and scouring sluices and the supply channel and several minor masonry works were in progress.

On the Buckingham canal the capital outlay was Rs. 2,03,687 including indirect charges. Seven locks were completed and six locks and some improvements and diversions were in progress.

5. The following statement shows the revenue receipts and working expenses of each work in operation for which capital and revenue accounts are kept:—

Serial number.	Systems.	Capital outlay.	Gross revenue receipts, 1895-96.			Working expenses.			Net actual revenue.	Deduct receipts less maintenance charges on account of old irrigation.	Net revenue attributable to outlay of Government capital.	Percentage of returns.
			Irrigation revenue.	Miscellaneous receipts.	Total.	Direct.	Indirect.	Total.				
1	2	3	4	5	6	7	8	9	10	11	12	13
	Major works.											
1	Gódávari	Rs. 1,28,30,331	Rs. 25,96,077	Rs. 1,09,978	Rs. 27,06,055	Rs. 6,26,631	Rs. 29,481	Rs. 6,56,112	Rs. 20,49,943	Rs. 1,15,500	Rs. 19,34,443	Rs. 15·08
2	Kistna	1,21,81,403	22,38,791	64,279	22,93,070	6,93,303	28,499	7,21,802	15,71,278	66,100	15,06,178	12·36
3	Pennéru	18,89,753	2,84,906	709	2,85,615	64,854	4,964	69,818	2,15,797	67,000	1,48,797	7·34
4	Sangam	38,10,415	3,30,586	443	3,31,029	80,860	3,928	84,788	2,46,241	1,14,000	1,32,241	3·47
5	Karnool	2,17,00,510	1,31,112	8,619	1,39,731	1,05,380	3,930	1,09,310	30,421	..	30,421	0·14
6	Barar	4,23,461	11,052	39	11,091	3,670	173	3,843	7,248	1,850	5,398	1·7
7	Cauvery	18,11,489	(a) 45,46,893	2,521	45,49,417	4,14,676	39,644	4,54,320	40,94,177	31,66,760	9,27,417	51·19
8	Srivaikuntam	14,62,798	1,58,543	1,110	1,59,653	37,931	1,972	39,903	1,19,750	56,500	63,250	8·64
9	Rushikulya	42,65,088	63,567	533	64,100	31,043	675	31,718	32,382	25,816	6,566	0·15
	Total, Major works, 1895-96	6,03,75,268	1,03,60,527	1,78,234	1,05,38,761	20,49,378	1,13,146	21,61,524	83,77,237	36,43,826	47,33,711	7·84
	Total for 1894-95	5,84,83,794	1,00,27,139	1,94,153	1,02,21,322	18,28,484	1,11,109	19,39,593	82,81,729	37,57,822	45,24,207	7·61
	Minor works.											
	I. Irrigation.											
11	Ganjam minor rivers	..	1,28,166	..	1,28,166	2,821	83	2,904	1,25,262	95,249	29,963	..
16	Cauvery tank	..	41,433	..	41,433	1,470	24	1,494	39,939	30,001	9,938	18·05
16	Thalapalli channel	..	1,05,571	89	1,05,671	6,006	92	6,097	1,00,474	78,063	21,411	12·36
17	Arkeshola do.	..	27,779	6	27,779	1,943	38	1,981	25,798	18,943	6,855	7·34
18	Kalingarayan channel	..	1,06,671	157	1,06,671	6,118	103	6,221	1,00,450	84,963	15,487	3·47
19	Pélar anicut	..	2,81,396	2,062	2,81,396	86,749	1,194	86,941	2,27,453	1,21,100	1,06,353	0·14
20	Poiney do.	..	86,689	226	86,689	26,440	736	26,176	60,413	40,514	19,899	6·17
21	Cheyáru anicut	..	94,391	253	94,391	30,603	736	31,339	63,052	44,391	18,761	8·15
22	Chembarambakam tank	..	36,931	140	36,931	4,407	90	4,497	32,434	9,100	23,334	4·68
23	Madras water-supply	..	31,085	10,103	41,188	6,284	266	6,550	24,518	6,200	18,318	3·13
24	Vellaru anicut	..	9,469	21	9,490	699	13	712	8,767	5,269	3,498	1·04
25	Tirukkóyilúr anicut	..	98,481	378	98,859	20,018	482	20,500	78,981	69,914	9,067	6·48
26	Mehnuttur do.	..	14,890	47	14,937	4,730	120	4,850	10,040	2,089	7,951	5·92
27	Viddachalam do.	..	23,837	130	23,967	6,379	118	6,497	17,310	6,400	10,910	11·19
28	Shatiatope do.	..	1,25,644	215	1,25,859	16,164	288	16,452	1,09,192	20,999	88,193	17·91
29	Pelandorai do.	..	33,074	105	33,179	6,990	118	7,108	26,028	2,050	24,078	6·30
30	Lower Coleroon anicut	..	4,43,372	994	4,44,366	33,260	489	33,749	4,09,623	1,49,424	2,60,199	42·47
31	Sandyar channel	..	15,660	..	15,660	622	6	628	14,922	16,345	— 1,423	— 2·83
32	Manalur anicut	..	1,79,497	197	1,79,694	19,643	424	19,967	1,59,630	1,10,412	49,118	112·78
	Total, I. Irrigation	72,69,983	18,15,118	14,668	18,29,786	2,46,246	5,400	2,51,646	16,31,141	9,02,216	7,28,925	10·04
	II Navigation.											
33	Chilka Lake canal	31,027	..	..	..	371	10	381	— 381	..	— 381	— 1·22
34	Buckingham do.	86,83,601	1,08,374	89	1,08,463	92,537	3,486	96,023	— 12,351	..	— 12,351	— 0·14
35	Vedaraniam do.	..	1,136	6	1,142	4,247	124	4,371	— 3,216	..	— 3,216	..
36	Ganjam-Gopalpur canal	1,55,493	..	..	..	15	..	15	— 15	..	— 15	— 0·009
	Total, II Navigation	88,70,121	1,09,510	95	1,09,610	97,180	3,620	1,00,770	8,740	..	8,740	..
	Total, Minor works, 1895-96	1,61,30,104	1,24,628	14,763	19,92,396	3,43,396	9,020	3,52,416	16,39,881	9,02,216	7,37,665	4·57
	Total for 1894-95	1,67,72,920	1,29,022	14,855	18,37,899	3,55,924	10,860	3,66,774	14,71,125	7,94,739	6,76,386	4·22

(a) Inclusive of the revenue of the previous year, viz., Rs. 2,46,713, derived from the system in the Trichinopoly district.

6. The net revenue derived from Major Works was Rs. 2,00,501 more than during the preceding year, the gross revenue collected and the working expenses being greater by Rs. 3,17,439 and Rs. 2,21,931, respectively. The increase in net revenue occurred on all systems except the Sangam and Srivaikuntam anicut systems. The bulk of the increase of Rs. 1,79,577 in working expenses was incurred on the Kistna delta system which is chiefly due to the very heavy expenditure necessitated in closing breaches caused by the cyclonic storm in September 1895. The percentage of net revenue on capital outlay was 7·84 in 1895-96 against 7·61 in the previous year. The interest charges during the year amounted to Rs. 22,28,609 and up to the end of the year to Rs. 4,01,47,363. The surplus revenue, after deducting the interest charges, was Rs. 25,05,702 during the year, and amounted to Rs. 5,60,31,961 up to the end of the year.

7. On the Minor *Irrigation* Works for which Capital and Revenue Accounts are kept, the net revenue attributable to the outlay of Government capital was Rs. 57,094 more than during the previous year. There was a decrease in the working expenses of Rs. 9,121. The percentage of net revenue on capital outlay was 10·04 as against 9·45 in the previous year.

Of the four Minor *Navigation* Works the gross revenue derived from the Buckingham Canal exceeded the working expenses by Rs. 12,351 against Rs. 7,891 in the preceding year, while the income derived from the remaining works was insufficient to cover the working expenses, the net loss being Rs. 3,611 or Rs. 275 more than in the previous year.

8. The total irrigation receipts from the Major Works amounted to Rupees 1,03,60,527, of which Rs. 99,09,632 inclusive of the sum of Rs. 2,46,713, the revenue of the previous year of the Cauvery delta system brought into the accounts of 1895-96, represented the share of land revenue due to irrigation, and Rupees 4,50,895 was the share of enhanced land revenue due to the improvements.

9. The following statement compares the irrigation receipts with the areas under first and second crops charged as irrigated :—

System.	Revenue derived from irrigated lands.		Area charged as irrigated.		Rate per acre.	
	1895-96.	1894-95.	1895-96.	1894-95.	1895-96.	1894-95.
1	2	3	4	5	6	7
Major Works.	Rs.	Rs.	Acs.	Acs.	Rs.	Rs.
Gódávari	25,96,077	25,04,022	683,126	759,613	3·8	3·3
Kistna	22,38,791	20,36,134	481,376	519,376	4·6	3·9
Pennéru	2,84,906	2,83,118	70,148	70,559	4·0	4·0
Sangam	3,30,586	3,24,490	77,347	76,078	4·2	4·4
Karnool	1,31,112	1,08,580	32,903	35,640	4·0	3·1
Barar	11,052	11,842	4,429	4,480	2·8	2·6
Cauvery	(a) 45,46,893	45,38,420	987,103	989,891	4·6	4·8
Srivaikuntam	1,58,543	1,77,383	35,962	39,673	4·6	4·6
Rushikulya	63,567	47,160	35,917	27,389	1·7	1·7
Total irrigation works not charged against Revenue, Minor Works	1,03,60,527	1,00,27,139	2,406,090	2,520,599	4·3	3·9
I. Irrigation Total ..	18,67,658	17,08,877	534,227	463,064	3·5	3·7
Grand Total ..	1,24,28,185	1,17,36,016	2,940,317	2,983,663	4·2	3·9

(a) Inclusive of the revenue of the previous year, viz., Rs. 2,46,713, derived from the system in the Trichinopoly district.

Under Major Works the area charged as irrigated was 114,509 acres less and the revenue derived Rs. 3,33,388 more than in the previous year. The decrease in the area occurred chiefly under the Gódávari and Kistna delta systems, owing to relinquishment of irrigation in consequence of enhancement of water-rate. The improvement under revenue represents the increase derived from the above systems owing to the enhancement of the water-rate from Rs. 4 to Rs. 5, and the increment of the settlement assessment of the Cauvery delta system falling due in the year.

10. The area irrigated and revenue derived from Minor Works were 71,163 acres and Rs. 1,58,781, respectively, more than in the previous year. There was a large decrease of Rs. 6,590 in the revenue derived from the Maradur anicut system, which was chiefly due to unusually heavy rain in December last, and consequent floods which silted up large areas of wet lands and necessitated the grant of remissions amounting to Rs. 6,160.

11. The following statement gives details of the average water-rate per acre for first and second crops under Major Works, excluding the areas irrigated free of charge:—

—	First crop.						Second crop.
	Government lands.		Zemindari lands.		Inam lands.		
	Wet crop.	Dry crop.	Wet crop	Dry crop.	Wet crop.	Dry crop.	
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Godávari delta	4·80	2 51	5 09	3·47	5·00	2 95	3 08
Kistna	4 94	4·25	5 00	3·09	5·11	4·08	4 67
Pennéru anicut	4 62	2 93	..	..	4 00	3 21	2·71
Sangam	4·58	3 20	..	..	4 00	3·20	2 87
Kurnool-Cuddapah canal	3·70	1·75	..	..	3·82	1 81	2 81
Barur tank	3·75	3·25	..	..	3·95	4·00	1·19
Cauvery delta	4·92	3 06	..	..	3 99	3·16	3 74
Srivaikuntam anicut	6·23	3 35	3 92	4 90	4·23	3·60	3 22
Rushikulya project	1·93	2·26	2·09	1·00	2·08	2·14	1·59

12. The area irrigated under first crop on Major Works was 2,159,135 acres and under second crop 243,944 acres, making a total of 2,403,079 acres. These figures are less than those shown in column 4 of the statement in paragraph 9, as the latter includes the extent of "waste charged."

Of the total area of 2,403,079 acres, 2,336,914 were irrigated by flow and 66,165 acres by lift, or about 97·25 per cent. and 2·75 per cent., respectively.

13. The following statement shows the details of the working expenses, including the old maintenance charges for each of the Major Works and for the Minor systems in the aggregate:—

Systems.	1895-96.					1894-95.
	New works and repairs.	Establishment.	Tools and plant.	Indirect charges.	Total.	Total.
Major Works.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Godávari	2,49,046	3,34,130	43,455	29,491	6,56,112	6,48,501
Kistna	3,22,574	3,11,571	59,138	28,489	7,21,792	5,47,215
Pennéru	25,014	29,870	..	4,934	59,818	57,787
Sangam	43,394	37,466	..	3,928	84,788	72,209
Kurnool	72,423	31,882	1,074	3,930	1,09,310	1,09,660
Barur	2,075	1,595	..	173	3,843	4,862
Cauvery	80,564	3,32,690	1,416	29,564	4,44,240	4,52,364
Srivaikuntam	19,868	18,063	..	1,972	39,903	36,319
Rushikulya	20,781	6,708	3,554	675	31,718	15,866
Total, Major Works ..	8,35,739	11,03,982	1,08,657	1,13,146	21,61,524	19,39,593
Per acre irrigated	..	..	..	..	0·89	0·79
Minor Works and Irrigation ..	2,27,616	1,10,803	4,976	9,020	3,52,415	3,66,774
Grand Total ..	10,63,355	12,14,785	1,13,633	1,22,166	25,13,939	23,06,367

The cost of maintaining the Major Works during the year was 20·51 per cent. of the gross revenue derived from them against 19·00 per cent. in the previous year.

14. The charge for establishment in column 3 of the statement in the last paragraph is made up as follows:—

—	Major works.	Minor works and navigation.	Total.
	Rs.	Rs.	Rs.
Revenue management. { Direction and execution ..	6,08,569	12,477	6,21,046
Revenue management. { Collection charges ..	3,12,930	47,485	3,60,415
Total ..	9,21,499	59,962	9,81,461
Maintenance of works	1,82,453	50,861	2,33,324
Grand Total ..	11,03,982	1,10,803	12,14,785

The cost of revenue management on major works was 8·7 per cent. of the gross revenue realized from them.

15. The report shows that there are now in actual operation 3,494 miles of canals, of which 990 miles are for irrigation and navigation, 2,200 miles for irrigation only, and 304 miles for navigation only. From the irrigation canals 6,792 miles of distributary channels are taken off. The total ultimate irrigable area under the canals is 3,153,666 acres, and the area irrigated during the year was 2,837,407 acres, the crops grown being valued at Rs. 6,15,35,310 or Rs. 53,65,474 less than in the previous year. The estimated outturn of the year compares with the corresponding figures of the previous year as shown below:—

	1895-96.	1894-95.
	Rs.	Rs.
Paddy	5,75,76,313	6,31,32,502
Ragi	3,32,816	4,07,319
Other crops	36,26,151	33,60,963
Total ...	6,15,35,310	6,69,00,784

16. The following table gives the details regarding navigation on the principal canals:—

—	Length of navigable canals.	Receipts.	Expenditure.	Value of goods.	Ton mileage.	Passengers.
	Miles.	Rs.	Rs.	Rs.		No.
Godávari delta canals	493	87,043	77,270	2,24,77,993	7,635,231	241,150
Kistna delta canals	307	26,722	71,638	1,62,75,148	16,234,834	123,212
Kurnool-Cuddapah canal	190	1,302	10,791	3,51,583	148,638	38
Buckingham canal	252	1,08,382	62,069	2,57,97,068	28,375,467	101,202
Total for 1895-96 ..	1,252	2,33,449	2,21,758	6,49,01,772	51,294,170	465,657
Total for 1894-95 ..	1,252	2,50,355	2,19,169	5,31,20,783	50,678,811	467,806

17. The subjoined table gives details regarding works for which neither capital nor revenue accounts are kept:—

—	Area, first and second crops.	Irrigation revenue.	Rate per acre.	Outlay, direct and indirect, and collection charges.	Rate per acre.
	Acs.	Rs.	Rs.	Rs.	Rs.
I. Works under Public Works Department for which a continuous record of expenditure is kept individually	176,902	6,99,938	..	..	..
II. Other works under Public Works Department ..	1,405,833	40,81,061	..	..	..
III. Works under the Revenue Department	1,809,430	43,83,416	..	..	..
Total, 1895-96 ..	3,392,165	91,64,415	2·70	(a) 16,12,627	0·48
Total, 1894-95 ..	3,175,140	83,21,768	2·62	17,59,321	0·56

(a) Inclusive of Rs. 3,71,507, the outlay incurred by Civil Officers and not included in the accounts of the Examiner of Public Works Accounts.

The total area irrigated was made up of 2,538,935 acres of first crop and 853,230 acres of second crop, and the irrigation revenue was Rs. 8,42,652 more than in the previous year. The increase in revenue occurred in all the districts except Ganjám, Nellore, Kurnool and Trichinopoly. The decrease in the Ganjám district was small, that in Trichinopoly was due to the transfer of the irrigation under the Nandyar channel from "Minor works for which neither capital nor revenue accounts are kept" to Minor works for which such accounts are kept. The decrease in Nellore and Kurnool was due to the unfavourable character of the season.

18. The following statement exhibits the outlay on agricultural works :—

	Rs.	Rs.
Original works	1,11,292	
Repairs	3,13,998	
		4,25,290
Establishment		90,819
Tools and plant		6,108
Total ...		5,22,217

The receipts realized from the plantations along the river embankments amounted to Rs. 23,903 against Rs. 26,979 in the previous year.

19. Six investigating parties were employed on the Tank Restoration Scheme, the expenditure on which during and up to the end of the year was as follows :—

—	Expenditure during 1895-96.					Expenditure to end of 1895-96.
	Works.	Repairs.	Establishment.	Tools and plant.	Total.	
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Investigation	..	..	30,973	656	31,659	..
Execution	— 1,23,941	5,63,097	98,108	6,361	5,33,615	..
Total ..	— 1,23,941	5,63,097	1,29,081	7,037	5,65,274	..

Up to the end of the year 33,176 square miles had been completely investigated, and estimates for 4,662 works to the amount of Rs. 48,44,054 had been sanctioned.

20. The following figures relate to the discharge of some of the principal canals which are not supplied mostly from storage works, and the areas irrigated from them :—

—	Area actually irrigated, first crop.	Maximum discharge as designed.	Maximum discharge during the year.	Average discharge at head.	Acres irrigated per cubic foot per second of average discharge.
	ACRES.	CUBIC FEET.	CUBIC FEET.	CUBIC FEET.	FIRST CROP.
Gódávari	580,302	*8,516	13,176	6,155	94·28
Kistna	500,196	8,126	Not known.	4,000	125·05
Pennéru	64,898	2,300	1,647	300	216 33
Sangam	70,928	4,800	4,650	550	128·96
Kurnool	25,804	1,468	945	513	50 30
Cauvery	858,319	Not known.	23,920	13,868	61·94

* Previous to the construction of the extra vents built in 1887-88 to the Dowlaishweram head sluice.

21. During the year the investigations required for the preparation of the completion estimates for the Cauvery delta system were commenced. The re-investigation of the Annumalanka project in the Gódávari Western division was also undertaken. Plans and estimates for the Atmakúru, Manchikallu and Jangamaheswarapuram projects in the Kistna Northern division were under preparation.

22. From local irrigation cess fund an outlay of Rs. 27,415 was incurred on improving and repairing the Cauvery channels in the Salem district, in clearing silt in the Utramerur channel in the Chingleput district, and in improving the Ponneri No. 1 branch channel in the Trichinopoly district.

23. A sum of Rs. 10,235 was also spent on irrigation works in the estates under the Court of Wards.

24. A descriptive note on the Sangam anicut system illustrated by photographic prints and the annual diagrams of the principal rivers connected with Major works have been appended to the report.

25. Ordered that forty copies of the Administration Report and of these Proceedings be forwarded to the Government of India.

[Here enter No. 1033 I., dated 5th December 1896.]

(True Extract.)

(Signed) W. HUGHES,
Joint Secy. to Government,
Irrigation Branch.

To the Chief Engineer for Irrigation.
„ all Superintending Engineers.
„ the Consulting Engineer for Railways.
„ the Examiner, Public Works Accounts.
„ the Revenue Department.
„ the Public Department.

ENDORSEMENT—No. 1033 I., dated 5th December 1896.

Forwarded.

(By order.)

Joint Secretary to Government,
Irrigation Branch.

Ed. C. Rajagopal.

Public Works Department.

Public Works (1896) Department.

CURRENT No. 11031

Order

From The Chief Engineer for Irrigation

No 2161

Dated 1st December 1896

Received 4.12.96

Enclosures 1 (Report) 4.12.96

Spare copies

SUBJECT.

Administration Report of the P.W.D. Irrigation Branch for 1895-96. Notes submitting — with the remark that the submission of the report was delayed owing to the late receipt of the final accounts of the Examiner of P.W. Accounts.

Ag. PWS.

The receipt of the [illegible] the Examiner [illegible] Please [illegible] the PWS [illegible]

WS 4/12

BACK PAPERS.

G.O.	No.	Department.	Date.

FURTHER PAPERS.

G.O.	No.	Department.	Date.

Spree

20 216 I

ADMINISTRATION REPORT OF THE P.W.D. IRRIGATION BRANCH :-

FOR 1895 - 1896.

Submitted to Government.

2.4H 21296 2. The submission of the report, which was due with ... the Government of India on the 30th November 1896, was unavoid-ably delayed owing to the late receipt of the final accounts of the Examiner P.W. Accounts, which reached this Office only-- on the 21st Idem.

For Chief Engineer for Irrigation.

Chepauk
1st December 1896.

To,

The Joint Secretary to Govt: P.W.D. Irrigation Branch.

P.W. Dept.
Order No: 2 & 3 dt

The report deals with 10 "Major works" & 26 "Minor works" for which Capital & Revt accounts are kept, & numerous other irrigation & agricultural works individually small, for which such accounts are not kept. Nine of the "Major works" are classed as productive, & one, the Rushikulya Project, as protective. All the "Major works" except the Periyar project were in operation & the construction estimates of seven of these have been closed.

2. Of the 26 "Minor works" 22 are irrigation systems & 4 are tidal

canals intended for purely navigation purposes. With the exception of the Mannjeru, Dondapad & Sajilem Projects & the Ganjam - Gopalpore tidal canal, the whole of the above are in operation, & of these the construction estimates have been closed except in the following three cases: the Buckingham Canal, the Pennar & Lower Coleroon anicut systems.

3. The capital outlay incurred on the Major & Minor works during & upto the end of 1895-96 was as follows:—

	Number of Works	During the year 1895-96. Works	Establishment	Tools & Plant	Less Receipts on Capital Account	Total direct charges	Indirect charges	Total direct & indirect charges	Total direct & indirect charges to end of 1895-96.
	2	3	4	5	6	7	8	9	10
		Rs	Rs	Rs	Rs	Rs	Rs	Rs	Rs
Major Works.									
Protective Irrigation Works (Account head, 35).	1	1,92,432	38,372	-3,595	752	2,26,477	27,727	2,54,204	1,26,058
Irrigation Works not charged to Rev. (Account head, 49)	9	10,69,393	2,38,789	36,915	2,389	13,42,708	4,57,965	13,88,673	6,44,10,822
Minor Works (Navigation Works for which Capital & Rev. Accounts are kept) (Account head, 43)	24	4,88,422	1,05,908	11,564	1,392	6,04,502	25,739	6,30,241	16,68,830

(a) Exclusive of the Ganjam Minor Works System & the Vedaranniem Canal for which complete Capital accounts upto end of 1895-96 have not yet been prepared.

4. Under Major Works, the capital outlay was incurred chiefly on the Kistna delta, Periya & Rushikulya systems.

On the Kistna delta system the capital outlay during the year amounted to Rs 5,56,299, including indirect charges, & was incurred

canals intended for

on various improvements to headworks, canals, distributaries & drains. The piers of the new head sluices intended to replace the existing head sluice at Sitanagaram which was badly cracked were built up to springing level.

The capital outlay on the Periyar system was Rs 7,51,403, including indirect charges. The main dam was completed with the exception of the tower on the right flank. The water-shed tunnel & the left bank escape were also finished. In the Madura division 108 miles of main & branch Canals ~~[illegible]~~ ~~distributaries~~ were completed to the end of the year under review.

The Periyar works were formally opened on the 10th Oct/95 by His Excellency Lord Wenlock, G.C.I.E., late Governor of Madras, but, ~~there was no irrigation~~ as the supply was not maintained continuously no ~~under the project during~~ revenue has been credited to ~~the~~ the Project.

The capital outlay on the Rushikulya system was Rs 2,54,204, including indirect charges. The progress of work was satisfactory, the Russel-Konda reservoir together with its feeder — the Gulleri channel — the incomplete works of the Rushikulya Canal & most of the distributaries having been completed.

Under Minor Works, the principal outlay was incurred on the Munagam & Sajiliem projects & the Buckingham Canal.

On the Mannargudi project the capital outlay was Rs 122,132 including indirect charges. The anicut & under sluices were completed, the main channel, the head sluice & several other masonry works were in progress.

On the Sagilem project the capital outlay was Rs 131,226 including indirect charges. The anicut, head & scouring sluices & the supply channel & several minor masonry works were in progress.

On the Buckingham Canal, the capital outlay was Rs 2,03,687 including indirect charges. Seven locks were completed & six locks & some improvements & diversions were in progress.

The year under review.

5. The following statement shows the revenue receipts & working expenses of each work in operation for which capital & revenue accounts are kept. —

Systems	Capital outlay	Gross revenue 1895-96		Receipts	Working Expenses			Net actual revenue	Deduct receipts for maintenance charges on account of old irrigation	Net revenue attributable to outlay of Capital	Percentage of Net on
		Irrigation revenue	Miscellaneous receipts	Total	Direct	Indirect	Total.				
2	3	4	5	6	7	8	9	10	11	12	13
Major Works.	Rs	Rs	Rs	Rs	Rs	Rs	Rs	Rs	Rs	Rs	
Godavari	128.30331	25.96077	109978	2706055	626631	29481	656112	2049943	1.15.500	1934443	15.08
Kistna	121.81.403	22.38791	54279	2293070	693303	28489	721792	1571278	66100	1505178	12.36
Pennes	18.89.733	284906	709	285615	54884	4934	59818	225797	87000	138797	7.34
Sangam	38 10.415	330586	443	331029	80860	3928	84788	246241	114000	132241	3.47
Kurnool	217 00 550	131 112	8619	139731	105380	3930	109310	30421		30421	0.14
Barur	4 23461	11 052	39	11091	3670	173	3843	7248	1850	5398	1.27
Cauvery	18.11.489	4545893	2524	4548417	414676	39564	454240	4094177	3166760	927417	51.19
Trichinopoly	14 62 798	158.543	1110	159653	37931	1972	39903	119750	66300	53250	3.64
Ruschikonda	42 65088	63.567	533	64100	31043	675	31718	32382	25816	6566	0.15
Total Major Works, 1895-96	603 75 268	10360527	178234	10539761	2048378	113146	2161524	8377237	3643526	4733711	7.84
Total for 1894-95	594 83 794	10027139	194183	10221322	1828484	111109	1939593	8281729	3757522	4524207	7.61
Minor Works.											
I. Irrigation.											
Ganjam minor rivers	..	128166	..	128166	2921	33	2954	125212	95249	29963	..
Cumbum tank	62271	41433	..	41433	1470	24	1494	39939	30001	9938	15.95
Madupalli channel	1 11570	105482	89	105571	5005	92	5097	100474	76063	24411	21.87
Arkenkota do	102964	27773	6	27779	1943	38	1981	25798	18943	6855	6.65
Kaligarayan do	60278	105514	157	105671	5118	103	5221	100450	84963	15487	25.69
Palar Anicut	2053988	282334	2062	284396	55749	1194	56943	227453	121100	106353	5.17
Poiney do	231779	86363	226	86589	25440	736	26176	60413	40514	19899	8.58
Cheyaru do	406147	94133	258	94391	30503	736	31239	63152	44391	18761	4.68
Chembrambakam tank	744038	36791	140	36931	4407	90	4497	32434	9100	23334	3.13
Madras water supply	1754045	20982	10103	31085	6284	266	6550	24535	6200	18335	1.04
Vellaru Anicut	63805	9448	21	9469	699	13	712	8757	5259	3498	5.48
Tirukkoyilur do	254470	95103	378	95481	20018	482	20500	74981	59914	15067	5.92
Nehmatter do	71047	14843	47	14890	4730	120	4850	10040	2089	7951	11.19
Vriddhachalam do	49737	23707	130	23837	6379	148	6527	17310	8400	8910	17.91
Shatiahpe do	137579	125429	215	125644	16164	288	16452	109192	20999	88193	64.10
Pelandorai do	453931	32929	105	33034	5990	118	6108	26926	2850	24076	5.30
Lower Coleroon do	6 12531	442378	994	443372	33260	489	33749	409623	149424	260199	42.47
Nandyar channel	50254	15550	-	15550	622	6	628	14922	16345	-1423	-2.83
Maradur anicut	43549	179300	197	179497	19543	424	19967	159530	110412	49118	112.78
Total, I. Irrigation	72 59 983	1867658	15128	1882786	246245	5400	251645	1631141	902216	728925	10.04
II. Navigation											
Chilka lake canal	31027	-	-	-	371	10	381	-381		-381	-1.22
Buckingham do	8683601	.	108374	108374	92537	3486	96023	12351	.	12351	0.14
Vedaraniem do	-	-	1136	1136	4227	124	4351	-3215		-3215	.
Ganjam-Gopalpore do	155493	-	-	-	15	.	15	-15		-15	-0.009
Total, II Navigation	8870121		109510	109510	97130	3620	100770	8740	-	8740	
Total Minor Works 1895-96	16130104	1867658	124638	1992296	343395	9020	352415	1639881	902216	737665	4.57
Total for 1894-95	15772920	1708877	129022	1837899	355924	10850	366774	1471125	794739	676386	4.22

Inclusive of the revenue of the previous year, viz Rs 24673, derived from the system in the Trichinopoly District.

6. The net revenue derived from Major works was Rs 209,504 more than during the preceding year. The gross revenue collected & the working expenses being greater by Rs 317,439 & Rs 221,931, respectively. The increase in net revenue occurred on all systems except the Sangam & Srivaikuntam ancient systems. The bulk of the increase of Rs 179,577 in working expenses was incurred on the Kistna delta system which is chiefly due to the very heavy expenditure necessitated in closing breaches caused by the cyclonic storm in Sept: 95. The percentage of net revenue

on capital outlay was 7.84 in 1895-96 against 7.61 in the previous year. The interest charges during the year amounted to Rs 22,26,009 & up to the end of the year to Rs 4,01,47,363. The surplus revenue, after deducting the interest charges was Rs 25,05,702 during the year & amounted to Rs 5,60,87,961 upto the end of the year.

7. On the Minor irrigation works for which capital & revenue accounts are kept the net revenue attributable to the outlay of Govt capital was Rs 57,094 more than during the previous year. There was a decrease in the working expenses of Rs 9,124. The percentage of net revenue

121 Inclusive of the revenue of the Tinnevelly Dist. the system in the Trichinopoly District.

on capital outlay was 10.04 as against 9.45 in the previous year.

Of the four Minor navigation works the gross revenue derived from the Buckingham canal exceeded the working expenses by Rs 12,351 against Rs 7,891 in the preceding year, while the income derived from the remaining works was insufficient to cover the working expenses, the net loss being Rs 3,611 or Rs 275 more than in the previous year.

8. The total irrigation receipts from the Major works amounted to Rs 10,360,527 of which Rs 99,09,632 inclusive of the sum of Rs 2,46,713; the revenue of the previous year of the Cauvery delta system brought into the accounts of 1895-96, represented the share of land revenue due to irrigation & Rs 4,50,895 was the share of enhanced land revenue due to the improvements.

9. The following statement compares the irrigation receipts with the areas under first & second crops charged as irrigated.—

System	Revenue derived from irrigated lands		Area charged as irrigated		Rate per acre	
	1895-96	1894-95	1895-96	1894-95	1895-96	1894-95
	2	3	4	5	6	7
	Rs	Rs	acres	acres	Rs	Rs
Major Works.						
Godavari	25,96,077	25,04,022	683,126	759,513	3.8	3.3
Kistna	22,38,791	20,36,254	481,375	519,976	4.6	3.9
Pennar	2,84,906	2,83,118	70,128	70,559	4.0	4.0
Sangam	3,30,586	3,24,490	77,347	76,678	4.2	4.2
Kurnool	1,31,112	1,04,550	32,903	33,540	4.0	3.1
Bezwada	11,052	11,842	4,229	4,180	2.6	2.6
Cauvery	45,45,893	45,38,420	987,103	989,891	4.6	4.8
Tiruchinapalli	1,58,543	1,77,383	33,962	38,573	4.6	4.6
Rushikulya	63,567	47,160	35,917	27,389	1.7	1.7
Total irrigation works as charged against Rev.	103,60,527	100,27,139	2,406,090	2,520,599	4.3	3.9
Minor Works.						
I. Irrigation. Total	18,67,658	17,08,877	534,227	463,064	3.5	3.7
Grand Total	122,28,185	117,36,016	2,940,317	2,983,663	4.2	3.9

(a) Inclusive of the revenue of the previous year, viz Rs 246713, derived from the system in the Trichinopoly DF.

Under Major works the area charged as irrigated was 114,509 acres less & the revenue derived Rs 3,33,388 more than in the previous year. The decrease in the area occurred chiefly under the Godavari & Kistna delta systems owing to relinquishment of irrigation in consequence of enhancement of water-rate. The improvement under revenue represents the increase derived from the above systems owing to the enhancement of the water-rate from Rs 4 to Rs 6 & the increment of the settlement assessment of the Cauvery delta system falling due in the year.

10. The area irrigated & revenue derived from minor works were 71,163 acres & Rs 1,58,781, respectively more than in the previous year. There was a large decrease of Rs 6,576 in the revenue derived from the Maraduru anicut system which was chiefly due to unusually heavy rain in Dec. last & consequent floods which silted up large areas of wetlands & necessitated the grant of remissions amtg. to Rs 6,160.

11. The following statement gives details of the average water-rate per acre for first & second crops under Major works, excluding the areas irrigated free of charge :—

	First Crop						Second crop
	Govt lands		Zemindari lands		Inam lands		
	Wet crop	Dry crop	Wet crop	Dry crop	Wet crop	Dry crop	
	Rs	Rs	Rs	Rs	Rs	Rs	Rs
Godavari delta	4·80	2·51	5·09	3·47	5·00	2·95	3·08
Kistna "	4·94	4·25	5·00	3·09	5·11	4·68	4·67
Pennar ancut	4·52	2·93	"	"	4·00	3·21	2·71
Sangam	4·58	3·20	"	"	4·00	3·20	2·87
Kurnool-Cuddapah Canal	3·70	1·75	"	"	3·82	1·81	2·81
Bayur tank	3·75	3·25	"	"	3·95	4·00	1·19
Cauvery delta	4·92	3·06	"	"	3·98	3·16	3·74
Srivaikuntam anicut	6·23	3·35	3·92	4·90	4·23	3·60	3·22
Rushikulya project	1·93	2·26	2·09	1·00	2·08	2·14	1·59

12. The area irrigated under first crop on Major works was 2,159,135 acres & under second crop 243,944 acres, making a total of 2,403,079 acres. These figures are less than those shown in column 4 of the statement in paragraph 9, as the latter includes the extent of "waste charged". Of the total area of 2,403,079 acres, 2,336,914 were irrigated by flow & 66,165 acres by lift, or about 97.25 per cent & 2.75 per cent respectively.

13. The following statement shows the details of the working expenses, including the old maintenance charges for each of the Major works & for the minor systems in the aggregate:—

Systems	1895-96					1894-95
	New Works & Repairs	Establishment	Tools & Plant	Indirect charges	Total.	Total
	Rs	Rs	Rs	Rs	Rs	Rs
Major works.						
Godavari	2,49,046	3,34,130	43,455	29,481	6,56,112	6,48,501
Kistna	3,22,574	3,11,571	59,158	28,489	7,21,792	5,42,215
Pennar.	25,014	29,870	"	4,934	59,818	57,787
Sangam	43,394	37,466	"	3,928	84,788	72,209
Kurnool	72,423	31,883	1,074	3,930	1,09,310	1,09,680
Bayur	2,075	1,595	"	173	3,843	4,862
Cauvery	80,564	3,32,696	1,416	39,564	4,54,240	4,52,354
Srivaikuntam	19,868	18,063	"	1,972	39,903	36,319
Rushikulya	20,781	6,708	3,554	675	31,718	15,666
Total, Major Works.	8,35,739	11,03,982	1,08,657	1,13,146	21,61,524	19,39,593
Per acre irrigated	"	"	"	"	0·89	0·79
Minor works & navigation	2,27,616	1,10,803	4,976	9,020	3,52,415	3,66,774
Grand Total	10,63,355	12,14,785	1,13,633	1,22,166	25,13,939	23,06,367

The cost of maintaining the Major works

during the year was 20.67 per cent of the gross revenue derived from them against 19.00 per cent in the previous year.

14. The charge for establishment in column 3 of the statement in the last paragraph is made up as follows:—

		Major works	Minor works & navigation	Total
		Rs	Rs	Rs
Rent management	Direction & execution	6,08,569	12,477	6,21,046
	Collection charges	3,12,930	47,485	3,60,415
	Total	9,21,499	59,962	9,81,461
Maintenance of works		182,483	50,841	2,33,324
Grand total		11,03,982	1,10,803	12,11,785

The cost of revenue management on major works was 8.7 per cent of the gross revenue realised from them.

15. The report shows

that there are now in actual operation 3,494 miles of canals, of which 990 miles are for irrigation & navigation, 2,200 miles for irrigation only & 304 miles for navigation only. From the irrigation canals 6,792 miles of distributary channels are taken off. The total ultimate irrigable area under the canals is 3,15,3,666 acres, & the area irrigated during the year was 2,837,407 acres, the crops grown being valued at Rs 6,75,35,310 or Rs 53,65,474 less than in the previous year. The estimated outturn of the year compared with the corresponding figures of the previous year as shown below:—

dia. 20

	1895-96 Rs	1894-95 Rs
Paddy	5,75,76,343	6,31,32,502
Ragi	3,32,816	4,07,319
Other crops	36,26,151	33,60,963
Total.	6,15,35,310	6,69,00,784

16. The following table gives the details regarding navigation on the principal Canals.—

	Length of navigable canals	Receipts	Expenditure	Value of goods	Ton mileage	Passengers
	Miles	Rs	Rs	Rs		
Godavari delta canals	493	87,043	77,270	2,24,77,993	7,535,231	241,150
Kistna delta canals	307	36,722	71,638	1,62,75,148	15,234,834	123,212
Kurnool-Cuddapah canal	190	1302	10,791	351,563	148,638	33
Buckingham Canal	262	108,382	62,059	2,57,97,068	28,375,167	101,262
Total for 1895-96	1,252	233,449	221,758	6,49,01,772	51,294,170	465,657
Total for 1894-95	1,252	250,355	219,169	5,31,20,783	50,678,811	467,806

17. The subjoined table gives details regarding works for which either capital or revenue accounts are kept:—

	Area first & second crops	Irrigation Revenue	Rate per acre	Outlay direct & indirect & collection charges	Rate per acre
	Acres	Rs	Rs	Rs	Rs
I. Works under Public Works Dept for which a continuous record of expenditure is kept individually	176,902	6,99,938	"	"	"
II. Other works under Public Works Dept	1405,833	4081,061	"	"	"
III. Works under the Revenue Dept.	1809,430	4383,416	"	"	"
Total, 1895-96	3392,165	9164,415	2·70	16,12,627 [a]	0·48
Total, 1894-95	3,175,140	8321,763	2·62	17,59,321	0·54

[a] Exclusive of Rs 371,507 the outlay incurred by Civil Officers not included in the accounts of the Examiner of P. W. A.

The total area irrigated was made up of 2,538,935 acres of first crop & 853,230 acres of second crop, & the irrigation revenue was Rs 842,652 more than in the previous year. The increase in revenue occurred in all the districts except Ganjam, Nellore, Kurnool & Trichinopoly. The decrease in the Ganjam district was small that in Trichinopoly was due to the transfer

irrigation under
dis- Sandy as channel
2nd "allied works for which
proper capital and Rev.
Accounts are kept" to
allied works for which
such accounts are kept.
The decrease in Kellore
& Kurnool was due to
the unfavourable character
of the season.

18. The following state-
ment exhibits the outlay
on Agricultural Works:—

	Rs	Rs
Original works . .	1,11,292	
Repairs . . .	3,13,998	4,25,290
Establishment		90,819
Tools & plant		6,108
Total		5,22,217

The receipts realised
from the plantations
along the river embank-
ments amounted to
Rs 23,905 against Rs
26,979 in the previous
year.

19. Six investigating
parties were employed

irrigated from them:—

	Area actually irrigated first crop	Maximum discharge as designed	Maximum discharge during the year	Average discharge at head	Area irrigated per cubic foot per second of average discharge
	Acs	cub ft	cub ft	cub ft	first crop
Godavari . . .	580,302	+ 8,516	13,176	6,155	94·28
Kistna	5,00,196	8,126	Not known	4,000	125·05
Penner	64,898	2,306	1,547	300	216·33
Sangam	70,928	4,800	1,550	550	128·96
Kurnool	25,806	1,468	945	513	50·30
Cauvery.	858,349	Not known	23,920	13,858	61·94

+ Previous to the construction of the extra vents built in 1887-88 to the Dowlaishweram head sluices.

21. During the year the investigations required for the preparation of the completion estimates for the Cauvery delta system were commenced. The re-investigation of the Annamalanka project in the Godavari Western Dt. was also undertaken. Plans & estimates for the Attmakur, Manchikalla & Jangam-

on the Tank Restoration scheme, the expenditure on which during 1895-96 up to the end of the year was as follows:—

	Expenditure during 1895-96					Expenditure to end of 1895-96
	Works	Repairs	Establishment	Tools & plant	Total	
	Rs	Rs	Rs	Rs	Rs	Rs
Investigation . .	. .	. .	30,973	686	31,659	
Execution . . .	-123941	553,097	98,108	6351	533,615	
Total	-123941	553,097	129,081	7037	565,274	

Up to the end of the year 33,176 square miles had been completely investigated & estimates for 4,662 works to the amount of Rs 4,84,4,054 had been sanctioned.

20. The following figures relate to the discharge of some of the principal canals which are not supplied mostly from storage works, & the areas

heswaraswamy project in the Kistna basin. Dr were under preparation.

22. From Local irrigation cess fund an outlay of Rs 27,415 was incurred on improving & repairing the Cauvery channels in the Salem Dt.; in clearing silt in the Uttamerur channel in the Chingleput Dt & in improving the Pennair W. I branch channel in the Trichinopoly Dt.

23. A sum of Rs 10,235 was also spent on irrigation works in the Estates under the Court of Wards.

24. A descriptive Note on the Sangam Ancient System illustrated by photo. prints & the annual diagrams of the principal rivers connected with Major works have been appended

do report.

Ordered that forty copies of the Administration Report for three Pres: be forwarded to the Govt of India.

WH.
21/11

Endorsement:—

Forwarded.

23/11/97