

Chapter - II

Performance Audit

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Irrigation and Command Area Development Department

2.1 Implementation of selected Medium Irrigation Projects

2.1.1 Introduction

Medium Irrigation (MI) projects are projects that have Culturable Command Area (CCA)¹ between 5000 and 25000 acres. The Government had taken up nine MI projects in 2005 with a cost of ₹888 crore to be completed in two years. These were to create an irrigation potential (IP) of 1.1 lakh acres.

2.1.2 Scope and Methodology of Audit

A Performance Audit on implementation of selected Medium Irrigation projects was carried out during January to June 2016. Out of nine MI projects, five projects viz., Gollavagu, Mathadivagu, Neelwai, Peddavagu at Jagannathapur and Ralivagu were selected, using simple random sampling without replacement method. In the process, Audit scrutinized the records of Special Chief Secretary, Irrigation and Command Area Development (I&CAD) Department, Chief Engineer (Projects), Adilabad (CEADB), two Superintending Engineers (SE)² and three Executive Engineers (EE)³.

Audit methodology involved study of documents relating to Government decisions, policies, circulars, budgetary allocations etc., and joint inspections. Audit conclusions were drawn after obtaining information from I&CAD Department through issue of audit enquiries and replies thereto have been suitably incorporated in this Report. Audit objectives, scope and methodology were discussed with the Special Chief Secretary to Government of Telangana, I&CAD Department in the Entry Conference held on 6 May 2016. An Exit Conference was held on 31 October 2016 and the views of the Government have been taken into account in the Report.

2.1.3 Audit Objectives

The Performance Audit on “Implementation of selected Medium Irrigation Projects” was conducted to assess:

¹ The area, which can be irrigated from a scheme and is fit for cultivation is called command area

² (i) Irrigation Circle, Nirmal and (ii) Dr BRAPCSS Construction circle, Bellampally

³ (i) IB division, Adilabad; (ii) Dr BRAPCSS Construction division, Bellampally and (iii) Medium Irrigation Projects division, Mancherla

- (i) whether planning for the projects was comprehensive and individual projects were formulated properly;
- (ii) whether the execution of the project packages was systematic and in accordance with relevant provisions; and
- (iii) whether the intended benefits were achieved.

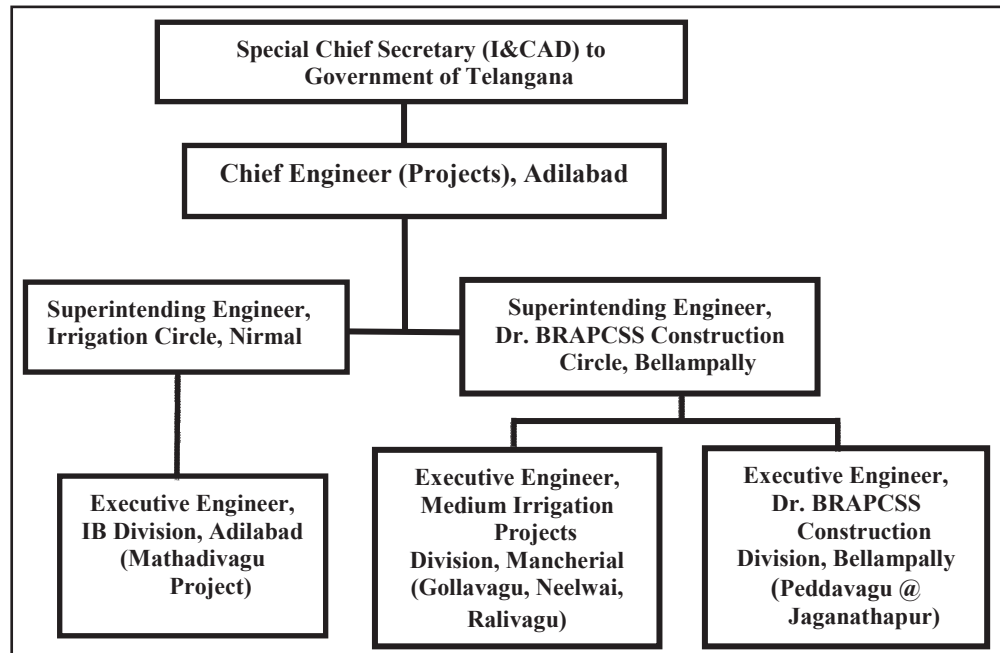
2.1.4 Audit Criteria

Performance Audit findings were benchmarked against the following sources:

- (i) Central Water Commission (CWC)/ Ministry of Environment and Forest (MoEF) / Ministry of Tribal Affairs (MoTA) / Accelerated Irrigation Benefit Programme (AIBP) guidelines;
- (ii) State Financial Code and State Public Works Department (PWD) Code;
- (iii) Rehabilitation and Resettlement (R&R) Policy - 2005 of the State Government;
- (iv) Guidelines relating to Engineering, Procurement and Construction (EPC) contracts and Internal Benchmark (IBM) estimations with relevant Schedule of rates;
- (v) Government Orders, memos and circulars issued from time to time;
- (vi) Provisions of Agreements for respective packages of projects concerned;
- (vii) Annual Budgets and annual action plans; and
- (viii) Detailed Project Reports (DPRs).

2.1.5 Organizational Setup

The organizational setup in respect of selected medium irrigation projects is depicted in the following organizational chart.



(Source: Information furnished by Chief Engineer, Projects, Adilabad)

Audit Findings

2.1.6 Physical and financial targets and achievements

All the five projects selected for Audit were entrusted (March 2005) to different agencies under Engineering, Procurement and Construction (EPC) contracts for completion within two years i.e., by March 2007. The present status of the projects is shown below.

Table 2.1: Details of contemplated irrigation potential and created, original cost, revised cost, expenditure and present status

Sl. No.	Project	Contemplated Irrigation Potential (IP) in acres	IP created in acres	Original cost (revised cost) (₹ in crore)	Expenditure as of March 2016 (₹ in crore)	Present status (as of May 2016)
1	Gollavagu	9500	4000	83.61 (96.61)	87.79	Head works and excavation of main canals completed.
2	Mathadivagu	8500	6900	50.40 (58.50)	58.50	Completed, except for a railway crossing.
3	Neelwai	13000	1000	90.50 (137.71)	119.39	Head works completed.
4	Peddavagu at Jagannathapur	15000	0	124.64 (163.78)	95.25	Head works in progress.
5	Ralivagu	6000	2000	33.30 (*)	48.00	Completed, except for ancillary works.
	Total	52000	13900	382.45	408.93	

* Revised Administrative approval is yet to be accorded

(Source: Information furnished by CEADB, SEs of projects concerned and VLC data from AG (A&E))

As can be seen from above, only one out of the five projects was completed fully (except for a railway crossing) and another project was completed except for ancillary works. The remaining projects were not completed due to improper planning and delays in land acquisition, submission and approval of

designs, rehabilitation and resettlement activities, obtaining forest clearances etc., as discussed in the following paragraphs.

Government stated (October 2016) that two⁴ out of the five projects were completed. In respect of Neelwai Project, the first contract was terminated (March 2011) due to slow progress and stoppage of work by the agency. Subsequently, the work was entrusted (December 2011) to another agency for completion by June 2013.

2.1.6.1 Funding pattern

All selected projects reviewed by Audit were included under the Accelerated Irrigation Benefit Programme (AIBP) of the Central Government which aimed at completion of the irrigation projects timely to derive early benefits. A review of original grants, supplementary grants, re-appropriations, total grants and actual expenditure incurred on the projects showed that an amount of ₹ 224.56 crore was re-appropriated from the original budget allocation of ₹ 948.15 crore from 2004-05 to 2015-16, while the Department could not spend ₹ 319.01 crore, as detailed below.

Table 2.2: Details of Excess / Savings of five selected medium irrigation projects

(₹ in crore)

Sl. No.	Project	Original Grants	Supplemental Grants	Re-appropriations	Total Grants	Expenditure	Excess (+) / Savings (-)
1	Gollavagu	129.40	0.00	4.26	133.66	87.79	(-)45.87
2	Mathadivagu	104.30	0.00	(-)12.89	91.41	58.50	(-)32.91
3	Neelwai	260.21	2.95	(-)42.93	220.23	119.39	(-)100.84
4	Peddavagu at Jagannathapur	375.84	0.00	(-)166.62	209.22	95.25	(-)113.97
5	Ralivagu	78.40	1.40	(-)6.38	73.42	48.00	(-)25.42
	Total	948.15	4.35	(-)224.56	727.94	408.93	(-)319.01

(Source: Information furnished by CEADB, SEs of projects concerned and VLC data from AG (A&E))

As can be seen from above, there were consistent savings across the projects. The original grants were also reduced through re-appropriations in eight out of 12 years in respect of Peddavagu at Jagannathapur, in seven years in respect of Mathadivagu and Neelwai projects and in six years for Gollavagu and Ralivagu projects (year-wise, project-wise details are given in *Appendix 2.1*).

The Government stated (October 2016) that the budget allocations could not be utilized in the initial years as preliminary issues were to be tackled for starting the works and, in the later years, due to issues in Rehabilitation and Resettlement (R&R) and land acquisition process.

⁴ Mathadivagu and Ralivagu

2.1.6.2 Assistance under AIBP

Information pertaining to Central assistance to the five selected projects under AIBP is given in *Appendix 2.2*. As per clause 6 of AIBP Guidelines of 2006, in case State Governments failed to comply with the agreed date of completion i.e., four years, grants given under AIBP were to be converted into Central loans and recovered as per usual terms of recovery of Central Loans.

Though the Department had received financial assistance of ₹ 228.63 crore out of ₹ 238.04 crore under AIBP from Government of India (GoI) by 2010-11, it could complete only two projects (Mathadivagu and Ralivagu). Three projects, viz., Gollavagu, Neelwai and Peddavagu at Jagannathapur have not yet been completed even after lapse of 11 years. The expenditure incurred (March 2016), when compared to revised administrative approvals, was 90.87, 86.69 and 58.15 *per cent*, respectively. It was further observed that there were shortfalls in utilization of funds released under AIBP in respect of Gollavagu (₹ 2.24 crore) and Peddavagu at Jagannathapur (₹ 41.53 crore).

Thus, despite receiving 96.05 *per cent* of assistance under AIBP, the objective of the projects to create IP of 52000 acres was not achieved as only IP of 13900 acres has been created so far. Since none of the projects were completed within four years as contemplated under AIBP, the possibility of conversion of grants to loans as per the clause *ibid* cannot be ruled out.

The Engineer in Chief (Irrigation) stated (February 2016) that the shortfall in utilization was due to obstruction from farmers/landowners, problems in land acquisition and slow progress of works.

2.1.7 Planning

Planning a MI project involves checking water availability and estimating the location and extent of land to be irrigated. As per Public Works Department (PWD) Code, it starts with the preparation of a preliminary investigation report wherein the feasibility of the project is checked. If the project is found to be feasible, a Detailed Project Report (DPR) is to be prepared by the Department. The DPR forms the blue print for execution of the project.

2.1.7.1 Non-compliance with CWC guidelines

As per Section 3.8.6 of Central Water Commission (CWC) Guidelines on preparation of Detailed Project Report (DPR), availability of water and proposed gross utilization under the project, live storage⁵ and water quality should be considered while preparing DPR. River flow discharge particulars for a minimum period of 10 years should be considered while calculating water availability.

⁵ Active or live storage is the portion of the reservoir that can be used for flood control, power production, navigation and downstream releases

It was observed that the river flow discharge observations were not made at the proposed dam sites while preparing DPRs in respect of four projects⁶. Instead, rainfall-run off relationship⁷, earlier derived for the Kaddam Project⁸, was adopted to work out the dependable yield of these projects. While according clearance, based on the above DPRs, CWC had suggested (June and November 2006) that flood studies used in the design be reviewed by using flood data and catchment rainfall at proposed dam sites. It had also suggested establishing gauging stations at the proposed dam sites for this purpose in Gollavagu and Ralivagu projects. However, neither flood studies used for designing of the projects were reviewed nor gauging stations were established at proposed dam sites as recommended by CWC. In the absence of flood studies at the proposed dam site, as suggested by the CWC, audit could not verify the scientific basis for calculating the dependable yield.

It was also observed that execution of works was entrusted (March 2005) to agencies prior to clearance of the projects by CWC (June 2006).

The Government stated (October 2016) that it was not feasible to set up individual gauging stations at all proposed sites as MI projects were scattered. Kaddam relationship was taken as only Kaddam project was the nearest available project with previous historical data of discharges etc.

The reply was not acceptable since rainfall-runoff relationship arrived at earlier for Kaddam might not be applicable in case of MI projects as dependable yield calculations could vary from major to medium projects. Further, the Department did not review flood studies as suggested by CWC.

2.1.7.2 Identification of area to be covered

According to Paragraph 391 of PWD code, if it is decided that a complete investigation be undertaken for a project, reports, plans and estimates should be prepared with full details; IP should be definitely fixed by the Department; main and minor channels and distributaries should be aligned and concurrence of farmers for inclusion of their lands in IP in the form of written statements or agreements by the Revenue Divisional Officer should be taken. Audit scrutiny showed the following:

- IP to be created in each of the villages, as prescribed in PWD code, was not contemplated in the DPRs in any of the projects. The agreements⁹ also did not prescribe village-wise IP to be created. Instead, IP to be developed in mandals was stipulated. As per agreements, the contracting agencies

⁶ Gollavagu, Mathadivagu, Neelwai and Ralivagu

⁷ Rainfall-runoff relationship depends on the dynamic interaction between rain intensity, soil infiltration and surface storage. Runoff occurs whenever rain intensity exceeds infiltration capacity of the soil. This is useful in preparation of DPRs

⁸ Kaddam is a major irrigation project in erstwhile Adilabad district

⁹ Except in agreements of Mathadivagu and Peddavagu at Jagannathapur projects, wherein village-wise IP was prescribed in agreements

were to prepare command survey plans marking villages for the command area and fix alignments. Thus, the contracting agencies had the flexibility of creating IP in villages, as the Department had not fixed the area at the time of preparation of DPRs.

Further, even in case of Mathadivagu, where village-wise IP was prescribed in agreements and project was completed, deviations from IP stipulated in agreement were observed as detailed below:

- (i) According to the agreement, IP of 766 and 489 acres was to be developed in Boraj and Sirisanna villages, respectively. However, no IP was created in these villages. The details of IP to be created as per agreement, IP created and proposed to be localized with the Revenue Department are shown in *Appendix 2.3*.
- (ii) Further, IP proposed to be localized¹⁰ in six villages¹¹ was less than the IP stipulated to be created as per agreement. In four villages¹², IP created was higher than the IP stipulated in the agreement.
- (iii) Moreover, IP of 977.06 acres was proposed to be localized in five villages¹³ under Mathadivagu, though these were not stipulated in the agreement.

Government replied (October 2016) that actual availability of IP in different villages could only be ascertained after joint inspection (joint *azmoish*) with Revenue Department, which was conventionally taken up after execution of canal system. It would not be feasible to ascertain village-wise command area with the Revenue Department at the planning stage.

The reply was not acceptable as the target IP was to be defined in the planning stage itself as per the PWD code.

- Concurrence of farmers in the form of written statements / agreements was not available on records. Not taking the stakeholders into confidence resulted in deletion of 1220 out of 6000 acres in Ralivagu project in May 2012, consequent to objections from land owners due to urbanization of Mancherial town in the vicinity of the project.

Government replied (October 2016) that the command area proposed in Mancherial was still under cultivation and had not yet been urbanized at the time of entrustment of work. However, audit scrutiny showed that

¹⁰ Localization is the term used for gazette notification of IP after joint inspection by the Irrigation and Revenue Department

¹¹ (i) Jamidi, E.Swargaon, Bandal Nagapur, Ghotkuri villages of Thamsi Mandal; (ii) Bhimsari and Jamdapur of Adilabad Mandal (6 villages)

¹² Mallapur, Waddadi, Khapparala of Thamsi Mandal and Chanda – T villages of Adilabad Mandal (4 villages)

¹³ Tharoda (358.87 acres), Dimma (359.15 acres), Fouzpur (161.76 acres), Pochera (97.28 acres) under Adilabad Mandal, One village Nipponi (93.41 acres) in Thamsi Mandal

permission to conversion of land use for residential purposes from agricultural purposes was given in 1995 itself by the Government and Mancherial was a class I urban area as per Census 2001, much before the project was taken up in 2005.

2.1.7.3 Planning for construction of head regulators without canals

In two projects (Peddavagu at Jagannathapur and Mathadivagu), the Department had planned for construction of regulators without corresponding canals leading to unfruitful expenditure apart from non-creation of IP for which the regulators were planned.

(i) Regulator on left flank in Peddavagu at Jagannathapur: The work of construction of Peddavagu at Jagannathapur was entrusted (March 2005) to an agency for ₹118.90 crore. The scope of work as per agreement included construction of head sluices / regulators for both Left and Right Flank canals. However, only Right Flank (RF) canal, to serve an IP of 15000 acres, was contemplated and included in the scope of agreement, leaving out the Left Flank (LF) Canal. Audit scrutiny showed that though the Left Flank canal was neither contemplated nor included in the scope of the agreement, the Department went ahead with construction (September 2014) of the LF regulator at a cost of ₹30.91 lakh. However, corresponding LF canal was not taken up rendering the expenditure on LF regulator unfruitful.

Government replied (October 2016) that surveys were being taken up and proposals were being formulated for LF canal for an IP of 500 acres.

However, the reply was silent on not taking up LF canal along with the project, leading to farmers being deprived of benefit of 500 acres IP and idling of the LF regulator for more than two years. This was also indicative of inadequate planning.

(ii) Regulator for right flank canal in Mathadivagu: The work of construction of Mathadivagu was entrusted to an agency for ₹37.80 crore. The DPR as well as the agreement contemplated a left flank canal and corresponding regulator. There was no proposal for right canal system either in DPR or in agreement.

Subsequently, based on representation received from the public representative (August 2005) for construction of Right Flank (RF) canal to create an additional IP of 1200 acres, the Department constructed a Right Flank (RF) regulator to release water into the right canal on Mathadivagu at a cost of ₹28.92 lakh (September 2009). However, no canal was constructed even after seven years of completion of RF regulator, resulting in unfruitful expenditure of ₹28.92 lakh, besides non-achievement of IP of 1200 acres. It was also indicative of lack of planning by the Department.

Government replied (October 2016) that tenders for RF canal had since been invited for creating additional IP of 1200 acres.

The reply was silent about delay in execution of canal even after seven years of completion of RF head regulator.

Further, audit scrutiny also showed that the Department had clarified (July 2005) in a public discussion that construction of RF canal was not feasible due to non-existence of IP on right side and presence of three local streams.

2.1.8 Execution of the Projects

The agencies selected for execution under the system were to carry out Survey and Investigation (S&I), submit designs, prepare estimates and execute the works. Audit observed delays in / improper S&I activities, leading to delays in commencement of works, as discussed in subsequent paragraphs.

2.1.8.1 Survey and Investigation

The executing agencies were to finalize alignment, land acquisition and forest clearance proposals on completion of S&I activities. As per agreement conditions¹⁴, the agency had to prepare land plan schedules and land acquisition proposals (private land, government land, forest land, etc), based on S&I. Audit observed delay in S&I and deficiencies leading to delay in completion as mentioned in subsequent paragraphs.

(i) Delay in completion of S&I activities: The stipulated time for completion of S&I activities in four Projects as per agreement was six months - three months for head works and main canal and another three months for distributary network. In the case of Mathadivagu Project, the time stipulated was three months.

Audit observed that in none of the projects, S&I activities were completed within the time stipulated in the agreement. The delays in completion of S&I activities ranged from six months (Mathadivagu) to 10 years (remaining four projects). In fact, S&I activities relating to field channels have not been completed till date (October 2016) in any of the Projects except Mathadivagu. The details are given in **Appendix 2.4**. Inordinate delays in completion of S&I activities commensurate with milestones prescribed in the agreements resulted in delay in commencement of works and consequent delays in completion of projects.

Government stated (October 2016) that S&I was an ongoing activity which was being taken up concurrently along with execution, especially in the canal system.

¹⁴ Clause 3.8 of Scope of Services – Survey and Investigation (Appendix SI)

The reply of the Government was not acceptable as the agencies had failed to adhere to the milestones prescribed in the respective agreements.

(ii) Non-submission of S&I reports: The agencies were to submit S&I Reports¹⁵ to the Department on completion of the S&I activity. They were also required to prepare estimates as per basic project parameters, based on S&I.

Audit observed that S&I reports were not on record even for the components for which S&I activities were completed, except for Gollavagu and Neelwai projects. In the absence of S&I reports, there was no assurance that S&I activities were conducted by agencies in accordance with the norms and requirements of the Department.

The Government stated (October 2016) that though reports might not have been prepared in standard format, approval of structures, alignment etc., were based on S&I data.

The reply, however, was silent on non-submission of the S&I Reports by the agencies, as per the requirement of the agreements.

(iii) Delay in submission of proposals for acquisition of forest land: As per the agreement, the agency for Peddavagu at Jagannathapur had to prepare land plan schedules and land acquisition proposals, including forest land etc., based on S&I by September 2005.

However, the agency reported (March 2007), 18 months after due date, that forest lands were required for execution of canal at Km 18.50 to Km 21.00. The delay on the part of the executing agency led to delay in initiation of process of obtaining forest clearances. Final forest clearances have not yet been obtained (May 2016). This led to delay in execution of main canal and consequent delay in completion of the project.

(iv) Defective S&I leading to deletion of IP: Preparation of village-wise ayacut¹⁶ register was a part of S&I activity as per agreement¹⁷ of Ralivagu project.

It was, however, observed that Mancherial village, selected for creation of IP under Ralivagu project had become urbanized and the same was not noticed by the agency during S&I activities. The Department was informed (June 2010) that the command area proposed in Mancherial village was near the Mancherial municipality and that approval for layouts including house sites had been given by Municipal Administration and Urban Development Department (1995) before entrustment of work (March 2005). No other land was made available for development of command area. Consequently, Government had to delete

¹⁵ Clauses 1.3, 2.4 of Scope of Services – Survey and Investigation (Appendix SI)

¹⁶ Local term for command area

¹⁷ Clause 3.5 of Scope of Services – Survey and Investigation (Appendix SI)

(May 2012) the distributary and field channels under it from the scope of the agreement with a cost reduction of ₹ 56.14 lakh.

Due to defective S&I, the Department had allowed the agency to execute the original irrigation infrastructure facilities i.e., reservoir and canal systems for irrigating 4500 acres, instead of 3280 acres that were actually available, leading to execution of main canal with higher discharge.

Government stated (October 2016) that though the command area was reduced, the infrastructure created could be used in good monsoon years for supplementing drinking water and recharging of ground water.

The reply was not acceptable as no separate mechanism had been established for providing drinking water facilities, as mentioned in paragraph 2.1.9.2. Moreover, the main canal also could not serve to recharge ground water as it was a lined canal through which water would not percolate down.

(v) Delay in execution of canal work due to improper soil investigation: It was also observed that soil investigation, which formed part of S&I, was not properly carried out by the agencies in Gollavagu, Neelwai and Peddavagu at Jagannathapur projects. During execution of lining of main canals of these projects, the executing agencies, however, informed the Department (October 2013 to April 2014) that the canal banks were slipping into the canal at certain places due to poor nature of soils and lining of canals would not stand in these reaches.

The first executing agency of Neelwai Project, which conducted S&I for main canal, did not inform the Department about non-suitability of soils. Subsequently, the second agency, to whom the balance work was awarded, noticed (October 2013) slippage of canal banks into the canals during execution and suggested for construction of guide / trough walls at a cost of ₹ 55.29 crore. Similarly, agencies executing Gollavagu and Peddavagu at Jagannathapur projects also informed (November 2013 and April 2014) the Department about the issue only during execution, when the concrete lining executed was found to be slipping into the canal. In Gollavagu project, construction of RCC trough for the damaged portion was proposed with a cost of ₹ 0.87 crore. The contracting agency of Peddavagu at Jagannathapur had submitted a proposal for alternative methods with a cost of ₹ 22.54 crore. These proposals are yet to be approved by Government (May 2016).

Thus, improper S&I by the agencies and delay in finalization of the alternatives suggested by the Department has resulted in delay in execution of canal works and completion of projects.

The Government replied (October 2016) that certain geological anomalies in isolated patches would only be exposed during execution and it was not feasible to conduct sub-soil exploration at minute level due to cost constraints.

Moreover, the cost of repairs of damaged portion was the liability of contractor.

The reply was not acceptable as the scope of work included survey and investigation by the agencies including exploration. Further, the reply was also silent on the alternative measures to be taken up.

2.1.8.2 Submission and approval of designs

As per the milestones prescribed in the agreement, executing agencies were to complete survey, detailed investigation, designs and drawings within six months. SE/CE of the project concerned or Chief Engineer, Central Designs Organization (CECDO) was to approve the designs submitted by the agencies depending upon the size and complexity of the structure.

- Information furnished by CECDO showed that the office had returned several times the designs submitted by the agencies in all projects for want of information / lack of data, indicating that the agencies were not submitting proposals as per the standards required. The Department had not included any criteria relating to experience in designing of projects while empanelling the agencies for medium irrigation projects. Thus, non inclusion of professional experience in designing in the eligibility criteria at the time of tendering had an adverse impact on timely finalization of designs.

Government replied (October 2016) that it would be difficult to prescribe the eligibility criteria relating to designs. Further the nature of designs and drawings was not uniform across the projects and, hence, additional data had to be supplied to CECDO. However, lack of uniformity and requirement of additional data did not justify the abnormal delays in finalization of designs.

- There were considerable delays in submission of designs and drawings to the CECDO in Mathadivagu and Peddavagu at Jagannathapur (**Appendix 2.5**). In respect of Peddavagu at Jagannathapur project, the agency had not submitted nine out of 93 designs for main canal, and 182 out of 281 designs for distributaries (March 2016).
- Audit also observed that no specific timelines were prescribed for the CECDO to approve the designs received by it. As a result, CECDO took two to 99 months for approval of designs (**Appendix 2.5**), leading to delay in execution.
- Considering the delays in finalization of designs, Government had prescribed (April 2007) a procedure for approval of designs of structures in EPC packages, which stipulated *inter alia* that on receipt of design proposals, the CE concerned had to examine the designs for structures and send the same to CECDO for approval within three days. The CE

concerned was to inform CECDO the expected date of approval of designs, depending on priority;

Information furnished by CECDO to audit showed that expected date of approval by CE and expected delay by CECDO to the CE concerned, as prescribed by the Government, were not communicated/ kept on record. This indicated that the Government orders intended for early finalization of designs were not complied with, leading to continued delay in finalization of designs.

2.1.8.3 Preparation of estimates by agencies

As per the basic project parameters of the agreements, the agencies were required to prepare estimates for head works, main canal, distributaries, CM & CD works and submit the same to the Department for approval.

In none of the projects, the agencies had submitted detailed estimates to the Department as per the terms of the contract. Executive Engineer, Mancherial division (EEMCL) confirmed that the agency for Gollavagu had not submitted any detailed estimate. In respect of four out of five projects, estimates were prepared by the Department and not by the executing agencies, as prescribed in the agreement.

The Government replied (October 2016) that the payment to the agencies was governed by payment schedules which were being calculated on percentage basis of the contract and there was no direct effect of the detailed estimate on payment schedule.

The reply was silent on non-preparation of estimates by the agencies in compliance with agreement conditions.

2.1.8.4 Payment Schedules

Payments under EPC turnkey system adopted by the Government were to be regulated on percentage basis relating to portions of work completed as per payment schedules mentioned in the agreements. The payment schedule was to be revised in the light of later information.

The Department approved several revisions of payment schedules as detailed below.

Table 2.3: Revisions to payment schedules

Sl. No.	Project	S&I actually completed in	Number of revisions to payment schedules	Payment Schedules revised in month/year
1	Gollavagu	NA	3	August 2006, May 2007, February 2016
2	Mathadivagu	December 2005	4	December 2006, May 2007, May 2008, November 2008
3	(a) Neelwai (First agency)	January 2007 for canals, S&I not completed for distributary, field channels	3	December 2006, February 2008, May 2008
	(b) Neelwai (Second agency)	Not furnished	4	January 2012, May 2013, November 2013, December 2015
4	Peddavagu at Jagannathapur	In progress as of May 2016	3	August 2007, August 2013, November 2013
5	Ralivagu	November 2005 for distributary, field channels not completed	3	August 2006, June 2007, November 2007

(Source: Information furnished by Superintending Engineers concerned)

The Department allowed payment schedules to be revised in Neelwai and Peddavagu at Jagannathapur even before completion of S&I activities and without submission of detailed estimates by EPC agencies. The Department also allowed revision of payment schedules in Mathadivagu and Ralivagu Projects, four and three times respectively, after completion of S&I without detailed estimation / justification, thus giving scope for manipulation and front loading of payments. Further, frequent revision of payment schedules after completion of S&I was also indicative of improper S&I and cost analysis by executing agencies.

The Government replied (October 2016) that percentages fixed for major components were not modified and further breakup was done within such percentages fixed for major components.

However, revision/ breaking up of payment schedules were made without any recorded reasons/ justification.

2.1.8.5 Implementation of Rehabilitation and Resettlement

Government had introduced (April 2005) Rehabilitation and Resettlement (R&R) policy to address the issue of displacement due to construction of projects. To take up R&R, the Government was to appoint an Administrator for R&R who would conduct socio economic survey to arrive at the benefits to be provided. R&R Policy defined Project Affected Family (PAF) as “a family whose source of livelihood is substantially affected by the process of

acquisition of land for the project or practicing any trade, occupation or vocation continuously for a period of not less than three years in the affected zone.”

Timely completion of R&R was also essential for smooth and timely completion of the projects.

- In Mathadivagu, Peddavagu at Jagannathapur and Ralivagu projects, it was observed that lands measuring 1182, 825 and 203.76 acres were acquired within full reservoir level (FRL) from 945, 1236 and 284 land owners, respectively. However, despite submergence of the lands, R&R was not taken up on the ground that no family was displaced from the villages.

Government replied (October 2016) that the village referred to in Mathadivagu project was not isolated due to construction of project and hence R&R was not extended. The reply was not acceptable as the issue raised in audit was about extension of R&R benefits to PAFs whose land was submerged under FRL and not whether villages were submerged leading to displacement of families. The land was acquired in respect of three projects within FRL and PAFs were eligible for financial assistance under R&R benefits as per Government policy, which was not extended to them.

- In Neelwai project, the Department had contemplated R&R for three villages¹⁸ at the DPR stage (June 2001). However, the CE had requested (July 2006) appointment of Project Administrator for R&R after 15 months of award of the work (March 2005). The Government took two months to appoint R&R Administrator. Due to non-completion of R&R activities, the contracting agency had stopped (June 2009) the work. Consequently, the Department had terminated (March 2011) the contract.

The Department entrusted (December 2011) the work to a second agency for completion in 18 months. However, the Department failed to ensure that the R&R activities were completed even before awarding the balance work to the second agency. Consequently, due to non-shifting of Project Affected Families (PAFs) from the reservoir area, extension of time totalling 390 days was granted to second agency also.

Government replied (October 2016) that the remaining work had to be entrusted to a second agency immediately as the original agreement was terminated under clause 61 of PS to APDSS¹⁹.

¹⁸ Katepalli, Gudepalli and Gerregudem

¹⁹ Clause 61 of preliminary specifications to Andhra Pradesh Detailed and Standard Specification (APDSS) stipulates that if the expenditure incurred by the Department for completion of the work by a second agency exceeds amount that would have been payable to the first agency, the difference shall be paid by the first contractor to Government

The reply was not acceptable, as the department failed to ensure completion of R&R activities before entrustment of work to second agency. Moreover, extension of time for 390 days had to be accorded to second agency also due to non-shifting of PAFs.

2.1.8.6 Extension of Time

As per clause 24.10 of general conditions of contracts (general), reasonable extension of time (EoT) was to be allowed by the officer competent to sanction EoT for unavoidable delays which resulted from causes which were beyond the control of the contractor. Further, the officer was to permit extension of time for additional 25 *per cent* over and above the actual working period lost, if such loss of working period was on account of written instructions issued by the officer.

However, it was observed that on 15 occasions, where EoT was granted, the Department added 25 *per cent* extra time to the working period actually lost in respect of Gollavagu (156 days), Mathadivagu (156 days), Neelwai (169 days for first agency), Peddavagu at Jagannathapur (198 days) and Ralivagu (74 days) although no written instructions were given by the EEs / SEs for stopping the work.

The Government stated (October 2016) that the excess working period of 25 *per cent* over and above the actual period was calculated by the concerned EEs, based on the records, which reflected the progress/ stoppage of work at site.

The reply was not acceptable, as additional 25 *per cent* was to be given only when the Engineer in Charge gave instructions to stop the work or if there was hindrance caused due to his written instructions; the additional time was not to be given in any other case.

In Gollavagu Project, the Department had recommended EoT for two years from 31 December 2009 to 31 December 2011 (730 days), though actual time loss due to hindrance was noted as 246 days. No reasons for grant of EoT for the additional 484 days were on record.

The Government stated (October 2016) that EoT of two years was granted without any financial liability to the Department. The reply was not acceptable, as allowing EoT beyond actual time lost had delayed the completion of the projects. The reply also did not take into account the financial liability on the Department owing to price variation with efflux of time.

2.1.8.7 Undue benefit to the contractors

In all the EPC contracts, as per the clarification²⁰ issued by the Government, the change in cost, except due to change in basic parameters, was to be borne by or was to accrue to the contractor. In case there were changes in basic parameters, the modalities for effecting consequent changes in the cost were to be worked out. It was seen that there were multiple instances where changes in designs proposed by the agency were approved by the Department. However, no reductions in value of agreements were effected, leading to undue benefit to agencies, as discussed in the succeeding paragraphs.

(i) In Peddavagu at Jagannathapur project, the original agreement proposal (March 2005) was for providing an anicut for a length of 390 meters. Accordingly, the work was awarded to a contracting agency for a contract value of ₹118.90 crore. The Internal Benchmark (IBM) for the work estimated by the Department was ₹120.39 crore. As per this IBM, the Department estimated the cost of anicut at ₹65.69 crore. Subsequently, the agency requested the Department for construction of barrage / falling shutters, instead of an anicut, which was accepted by the Department without any reduction in the agreement value. The Department estimated the cost of construction of the barrage to be ₹62.83 crore. However, no cost adjustment was made, though basic project parameters were changed, resulting in undue benefit of ₹2.82 crore²¹ to the agency.

Government replied (October 2016) that the savings due to change in the scope from anicut to barrage did not cover the cost of the road bridge over the barrage which would be required. The total cost had increased by ₹3.63 crore.

The reply was not tenable as the Department had failed to reduce the cost due to change in basic parameters from anicut to barrage. Further, the Department had also not executed the road bridge till the date of audit. Moreover, the accepted revised design from anicut to barrage had provision for construction of Road Bridge also.

(ii) In the case of Ralivagu project, the agreement had stipulated design discharge of left and right main canals at 1.486 cumecs²² and 0.771 cumecs, respectively, as basic project parameters. It was to have an IP of 6000 acres of Khariff as per the DPR.

However, during execution, the design discharges were reduced (March 2007) to 0.869 cumecs and 0.493 cumecs, respectively. Similarly, the lengths were also decreased from six km to 5.3 km in respect of left main canal and from five km to 4.2 km in case of right main canal. It was observed that these

²⁰ Government Memo No.34843/Reforms/2006, dated 7 May 2008

²¹ (₹65.69 crore - ₹62.83 crore) X (100 - 1.2449)/100; 1.2449 being tender discount as per agreement

²² Cubic meter per second

changes were initially adopted in the designs submitted by the agency though not stipulated in the agreement. Further, the IP was also changed as 4500 acres Khariff and 1500 acres Rabi in the agreement, when compared to 6000 acres of Khariff as per DPR, for reasons not on record. This was again reduced to 3280 acres Khariff due to urbanization of Mancherial as mentioned in earlier paragraphs.

However, no cost adjustment was done for reduction in design discharge, which was a basic project parameter as per the norms defined (May 2008) by the Government.

Government replied (October 2016) that the discharges and lengths of canals shown in basic parameters were only a projection and could be assessed accurately only after detailed survey and investigation.

The reply was not acceptable as it was in contrast with the clarification of the Government which had defined basic project parameters (May 2008).

(iii) The work of construction of Mathadivagu was entrusted to an agency for ₹ 37.80 crore. The work included construction of a bridge on a distributary for crossing National Highway (NH). As per agreement conditions²³, all the crossings of canal system in respect of NH, State Highways, R&B Roads and Panchayat Raj Roads were to be provided with suitable bridges as per the standards of the respective Departments and as per the permissions granted by them. The costs of the bridges were deemed to have been included in the contract price quoted and no claim whatsoever on account of the condition were to be entertained.

However, the bridge on the distributary was constructed by National Highway Authority of India (NHAI). Despite this, the Department did not recover the cost of the bridge (assessed at ₹ 32.55 lakh in May 2008) from the agency.

The Government replied (October 2016) that recovery was not affected as the provision for NH was excluded from the Internal Benchmark (IBM).

The reply was not acceptable as the agreement had clearly stipulated that the bid value was to include cost of the bridges on National Highways too. IBM value was to be used only for internal assessment of the Department and tender evaluation. The bidders had quoted their prices based on the tender conditions, as per which the costs of the bridges on National Highways were deemed to have been included in the contract price quoted by the bidders.

(iv) As per the bid documents of Gollavagu project, the bidders were advised to quote taking into account that the works of the canal systems were likely to have several crossings in respect of National Highways etc., and costs of those

²³ Clause 21.0 Appendix – OS, “System requirements and conditions” in Volume I part D”

crossings were to be included in the bid. The same condition was included in the agreement²⁴ concluded with the contractor for ₹ 53.60 crore.

Scrutiny of records showed that though the Department had included construction of crossings in the agreements by the agency, the NHAI constructed the crossing for which the Department deposited ₹ 2.25 crore²⁵. The State Level Standing Committee (SLSC) had recommended (September 2015) to the Government deletion of construction of NH crossing from the scope of the work. Accordingly, the Department had deleted NH crossing from the scope of agreement. However, it reduced the cost of agreement by ₹ 14.90 lakh only, instead of ₹ 2.25 crore deposited to NHAI.

Government replied (October 2016) that NHAI would not have allowed the agency to take up the work. Further, the scope of crossing as per agreement was only for a double lane bridge and hence the cost as per provision made in the IBM was recovered from the agency.

The reply was not tenable as the agreement did not mention the number of lanes on the bridge. Since the works were entrusted on turnkey basis, the Department should have recovered ₹ 2.25 crore from the agency, which was paid by it to NHAI.

2.1.8.8 Avoidable expenditure

As per 61 of PS to APDSS, when possession of work and site is taken by Government, the portion of the work not completed by contractor is to be completed by the Government through another agency at the risk and expense of the contractor until whole of the work is completed by other agency.

In Neelwai Project, the first executing agency had stopped the work after June 2009. As no work was done in spite of giving EoT up to March 2011, the contract was terminated (March 2011) by the Department as per clause 61 of PS to APDSS. The remaining work was entrusted (December 2011) to another agency. The second agency had informed (March 2012) the Department that bund in gorge portion from 1212 meters to 1325 meters, from 1600 meters to 1625 meters and from 3960 meters to 4100 meters, stated to have been completed by the first agency, was not available on ground. Since, these reaches were outside the scope of the second agreement, the agency requested for extra amount for completion of the missing portion. This was accepted by the Department and a supplementary agreement for ₹ 79.70 lakh was concluded (December 2015) with the second agency.

The Government replied (October 2016) that the cost of repair of damaged portion for the length of 125 meters would be recovered from the first agency as the first agreement was terminated under clause 61 of PS to APSS.

²⁴ Clause 21.0 Appendix - OS

²⁵ September 2008 – ₹ one crore; March 2011 – ₹ 1.25 crore

However, the Department had not initiated any action to recover the amount from the first agency till the date of audit.

2.1.9 Completion and Maintenance

All the five projects were targeted to be completed within two years. Audit observations on completion of projects, achievement of irrigation potential, accrual of benefit contemplated, maintenance of project system and drinking water facilities are discussed in the succeeding paragraphs.

2.1.9.1 Achievement of Irrigation Potential

Out of the five projects, two projects viz., Mathadivagu and Ralivagu were completed. IP contemplated and IP created in the selected projects are shown below:

Table 2.4: Details of Irrigation potential contemplated as per DPR and created

(in acres)			
Sl. No.	Project	IP Contemplated as per DPR for Khariff	IP created so far
1	Gollavagu	9500	4000
2	Mathadivagu	8500	6900
3	Neelwai	13000	1000
4	Peddavagu at Jagannathapur	15000	0
5	Ralivagu	6000 [#]	2000
Total		52000	13900

[#] Target was revised to 3280 acres Khariff and 1500 acres Rabi due to urbanization around Mancherial town

(Source: Information furnished by Executive Engineers of respective projects and Chief Engineer (Projects), Adilabad during Entry Conference)

- As may be seen from the table, while Mathadivagu project was completed in full to yield intended IP, except for a railway crossing to be completed by Railways department, Peddavagu at Jagannathapur, it did not yield even partial benefits due to non-completion of head works. The remaining three projects achieved partial IP ranging between 7.66 per cent (Neelwai) and 42 per cent (Gollavagu) of the targeted IP.
- In DPR of Mathadivagu 18.978 m.cu.m of water was assessed as the requirement for irrigation for 8500 acres. Against this, only 6900 acres of IP was created due to non-construction of a railway crossing at the time of audit. On a proportionate basis, irrigating 6900 acres would require 15.40 m.cu.m per annum. Information furnished by Executive Engineer, Adilabad division (EEADB) for the past four years showed that water releases in all the years were less than the proportionate requirement for 6900 acres as shown below:

Table 2.5: Water releases during last four years from Mathadivagu for 6900 acres

		2012	2013	2014	2015
1	Releases for irrigation (in m.cu.m) (Requirement – 15.40 m.cu.m)	5.73	3.21	5.78	4.03
2	IP that can be served (in acres)	2566	1438	2589	1805

(Source: Information furnished by Executive Engineer, IB division, Adilabad)

While the IP created as of 2011 was only 6900, the Department had proposed (January 2014) localization of IP of 8750.01 acres. No joint inspection with Revenue Department (*Joint Azmoish*) was, however, conducted. Without localization and *Joint Azmoish*, actual coverage of land under command area could not be confirmed.

Government replied (October 2016) that created IP was not related to the actual IP irrigated. Quantity of water released varied from year to year. Further, the crop in the command area was cotton, for which water requirement was less, compared to groundnut and paddy which were proposed in the DPR. It also stated that *Joint Azmoish* with Revenue Department would be taken up after execution of canal system.

The reply was not acceptable since, as per the DPR, the Department had proposed Jowar, Groundnut and Cotton and not Paddy.

2.1.9.2 Drinking water facilities

The DPRs of the projects also provided for drinking water facilities to villages *en route*. Establishment of drinking water facilities was mentioned as one of the objectives in the Administrative Approvals. The number of beneficiaries envisaged under the Projects are given below:

Table 2.6: Details of persons to be benefited with drinking water facilities

Project	No. of persons
Gollavagu	18650
Mathadivagu	12500
Neelwai	16000
Peddavagu at Jagannathapur	9750
Ralivagu	9550

(Source: Administrative Approvals of projects concerned)

Basic project parameters of respective agreements (March 2005) also stipulated provision of drinking water to villages *en route*, by providing sluices at appropriate places as per requirement. In all the DPRs, drinking water needs were specifically taken into account. Water was to be supplied through Rural Water Supply (RWS) Department in rural areas.

However, there was no record to show that the I&CAD Department was providing drinking water to villages *en route* by itself or through any arrangement/ memorandum of understanding (MoU) made with RWS Department.

Government replied (October 2016) that no separate system was being provided for drinking water and that it was to be taken in conjunction with irrigation.

The reply confirmed that drinking water facilities were not created, though contemplated as one of the objectives.

2.1.9.3 Maintenance of project systems

As per the agreements, the agency was to be responsible for maintenance of the project for two years or two Khariff seasons, whichever was later, after completion of work.

In Mathadivagu and Ralivagu projects, the works were completed to an extent of 96.49 *per cent* (July 2011) and 92.06 *per cent* (July 2009), respectively. However, it was observed that agreements for Mathadivagu and Ralivagu projects were not extended after August 2011 and July 2009, respectively. The Department had neither taken over the projects for maintenance nor had entrusted the same to any agency.

In reply, EEADB stated (March 2016) that the agency had taken up Operations and Maintenance (O&M) works before letting out water to the distributaries every year. Water regulation and operation were being done by the agency though agreements were not in force for the last five years.

The reply was not acceptable as the agencies were not contractually liable for the maintenance of canal system as the agreements were not in force after August 2011. Further, O&M was a continuous activity, not to be taken up just before letting out water into the distributaries.

2.1.9.4 Non-utilization of building constructed at dam site

In Mathadivagu project, the Department had constructed (December 2011) quarters, section office with store room, flood control room and Water User Association (WUA) meeting hall at a cost of ₹36.76 lakh through the EPC agency. However, it was seen that the infrastructure had not been utilized till date as shown in the photograph below:



The Executive Engineer, Adilabad stated (April 2016) that the WUA meeting hall would be utilized whenever meetings would be conducted and flood monitoring would be done during flood operations in monsoon period. However, as confirmed by the EE, no WUA was formed (April 2016) and there were no field officials to whom staff quarters could be allotted or who would use the flood control room.

This indicated that the Department had created infrastructure worth ₹ 36.76 lakh without ascertaining actual requirement.

2.1.10 Conclusion

Projects were planned without properly taking into account water availability and planning village-wise irrigation potential. Survey and investigation activities were deficient and delayed. Submission of designs by the agencies was deficient and delayed. There were also delays in approval of designs. R&R activities were taken up with delay leading to grant of extensions of time to agencies. Payment schedules were repeatedly revised without adequate justification on record. There were instances of conferring undue benefits to the agencies with changes in basic parameters or owing of agencies' liabilities by the Department. Drinking water facilities, as envisaged, were not provided in any of the projects. Localization of IP created was yet to be completed. Only Mathadivagu project, out of the five sample projects was completed and it was serving full IP as intended (excepting for IP of 1600 acres not created due to non-completion of railway crossing); Ralivagu project, though completed except for ancillary work, could only serve 3280 acres against 6000 acres contemplated. The construction of remaining projects was in progress even after 11 years.

2.1.11 Recommendations

- *Tenders should include specifications regarding experience in major activities like survey, investigation and designing of projects in addition to experience in executing civil works.*
- *Department may consider completing R&R activities before taking up execution of the project works.*

- *Department may consider prescribing specific timelines for approval of designs to facilitate completion of projects within time schedules.*
- *Department may consider putting in place a mechanism for achieving the objective of drinking water facilities along with the creation of irrigation facilities.*
- *Joint exercises with Revenue Department may be conducted within specific time schedules to arrive at actual IP created.*