



THIRTEENTH KERALA LEGISLATIVE ASSEMBLY

**COMMITTEE
ON
PUBLIC UNDERTAKINGS
(2014-2016)**

FIFTY FIRST REPORT
(Presented on 11th December, 2014)

SECRETARIAT OF THE KERALA LEGISLATURE
THIRUVANANTHAPURAM

2014

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ON
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FIFTY FIRST REPORT

On

**The Action Taken by Government on the Recommendations contained in the
Fifty Fourth Report of the Committee on Public Undertakings
(2001-04) relating to Kerala Water Authority based on the
Report of the Comptroller and Auditor General of India
for the years ended 31-3-1997 and 31-3-1999 (Civil)**

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COMMITTEE ON PUBLIC UNDERTAKINGS (2014-2016)

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Shri M. K. Surendra Lal, Joint Secretary

Smt. M. R. Maheswary, Deputy Secretary

Shri P. S. Selvarajan, Under Secretary.

INTRODUCTION

I, the Chairman, Committee on Public Undertakings having been authorised by the Committee to present the Report on their behalf, present this Fifty First Report on the Action Taken by Government on the recommendations contained in the Fifty Fourth Report of the Committee on Public Undertakings (2001-04) on the working of the Kerala Water Authority based on the Report of the Comptroller and Auditor General of India for the years ended 31-3-1997 and 31-3-1999 (Civil).

The Statement of Action Taken by the Government included in this Report was considered by the Committee constituted for the year (2011-14).

This Report was considered and approved by the Committee at the meeting held on 3-9-2014.

The Committee place on record their appreciation of the assistance rendered to them by the Accountant General (Audit), Kerala, in the examination of the statements included in this Report.

K. N. A. KHADER,

Thiruvananthapuram,
11th December, 2014.

*Chairman,
Committee on Public Undertakings.*

REPORT

The Report deals with the Action Taken by Government on the recommendations contained in the Fifty Fourth Report of the Committee on Public Undertakings (2001-04). The Fifty Fourth Report relating to Kerala Water Authority was based on the report of the Comptroller and Auditor General of India for the years ended 31-3-1997 and 31-3-1999 (Civil) which were laid on the table of House on 23-4-1998 and 31-3-2000 respectively.

The Report contained 19 recommendations. The Committee (2011-14) considered the replies received from Government at it's meeting held on 3-9-2013. The Committee accepted the replies to the recommendations 1(2), 2(3), 3(4), 4(5), 5(7), 6(8), 7(9), 8(11), 9(13), 10(14), 11(19), 12(20), 13(21), 14(25), 15(27), 16(28), 17(30), 18(32) and 19(34) without any remarks. These recommendations and their replies form Chapter I of the Report.

CHAPTER I

REPLIES FURNISHED BY GOVERNMENT ON THE RECOMMENDATIONS OF THE COMMITTEE WHICH HAVE BEEN ACCEPTED BY THE COMMITTEE WITHOUT REMARKS

<i>Sl. No.</i>	<i>Para No.</i>	<i>Department concerned</i>	<i>Recommendations/Conclusions</i>	<i>Action Taken by Government</i>
(1)	(2)	(3)	(4)	(5)
1	2	Water Resources	The Committee finds that the officials of the Kerala Water Authority (KWA) are seriously at fault in not maintaining the relevant records regarding the execution of works as per Codal Provisions. The irresponsible and callous attitude of the officials in observing the provisions contained in the Public Works Accounts Code has caused unnecessary litigation and other recovery proceedings which has resulted on loss of exchequer. The Committee doubt whether the delay in settling of final bills was willful since it is understood that by delay in settling the bills the gain was for the contractors and not for the Government and	A detailed enquiry was conducted by the Vigilance Wing of KWA into all the 43 cases. As per the Vigilance Report: <ul style="list-style-type: none"> ● Amount recovered in nine cases and partly recovered in 3 cases and Revenue Recovery Proceedings is in progress to recover the balance amount

hence the officials by way of delaying the settlement of bills was helping the contractors from paying their dues to the Government. The Committee therefore recommends that action should be taken against all the officials who are involved in these 43 cases and the details of action taken should be intimated to the Committee at the earliest.

- Revenue Recovery stayed by the High Court in two cases
- Final bill was not closed in 4 cases
- Files and Records for the balance 25 cases are yet to be traced out by the Vigilance Wing of KWA. The Authority recommended and enquiry by Vigilance and Anti Corruption Bureau and the same is under the consideration of Government.

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The Committee recommends that the recovery proceedings should be speeded up and the amount due from the Contractors should be recovered in full without any further delay. The details of recovery made should be intimated to the Committee.

(1)	(2)	(3)	(4)	(5)
3	4	Water Resources	<p>The Committee understands that the provision regarding the settlement of final bills as given in the Kerala Public Works Account Code is not specific regarding the time limit within which the bills are to be settled. The Committee, therefore, recommends that the provisions regarding the final settlement of bills of the contractor should be amended and a time limit should be prescribed for settling of the bills.</p>	<p>In compliance with the recommendations of the PUC, the matter has been taken up with Government in PWD to amend the Public Works Account Code.</p>
4	5	,,	<p>The Committee points out that Accountant General was doing only test checks and hence only those cases that come to the notice of the Audit were being brought to light. The Committee feels that there may be yet other similar cases and recommends that a thorough examination of all the works completed during the last five years should be done and any short coming/irregularity with regard to settlement of the bills be brought to book.</p>	

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The Committee observes that the officials of the Kerala Water Authority were violating the general instruction issued by the Government in December 1972 with regard to the recovery of dues from defaulting contractors. Due to the delay in settling the matter within the time frame fixed, Government had lost an amount ₹ 1.37 crore. The Committee views this very seriously and points out that the audit by the Accountant General is only test check and not an exhaustive check and hence do not cover all the transactions. The Committee doubts that if a detailed enquiry were conducted into all the cases where the contracts were cancelled at the risk and cost of the contractor many more such cases would be unearthed. The Committee feels that the non-maintenance of required details and the delay in settlement of dues were deliberately aimed at helping the contractors to escape from their financial liabilities. The Committee therefore, recommends that a detailed enquiry should be conducted into all the cases where the contractors were terminated at the risk and cost of the contractors during the period from 1980-1981 to 1995-1996. The details of the enquiry should be intimated to the Committee.

Detailed Departmental Vigilance Enquiry was ordered in the year 2008. As part of the enquiry all Superintending Engineers and Executive Engineers concerned were directed to furnish the list of work where contracts were terminated at the risk and cost of Contractors for that period. In the Enquiry 23 cases were noted. Out of this 23 cases, recovery was effected in three cases, revenue recovery proceedings has been initiated in four cases, revenue recovery was stayed in one case and action is in progress in the remaining 15 cases.

(1)	(2)	(3)	(4)	(5)
6	8	Water Resources	The Committee recommends that action should be taken against all the Officers who had failed to adhere to the Government instruction with regard to recovery of liabilities from the defaulting contractors and the details of action taken should be intimated to the Committee.	
7	9	„	The Committee also desires that hereafter the amount lost to Government due to the failure of the Officials in taking timely action in recovering the liabilities of the contractors should be realized from the Officials concerned.	Noted for future guidance and in compliance with the recommendations of the Committee, direction was issued to MD, KWA to effect recovery of loss sustained to Government/KWA from the officers for their failure.
8	11	„	The Committee concludes that the Officials of the Kerala Water Authority are not giving due importance and seriousness to the audit. This audit paragraph could have been avoided if the concerned Officials had informed the Audit team of the facts when the objection was first raised. The Committee therefore, recommends that the objections raised by Audit should be looked into immediately and necessary remedial measures be	Circular instruction on this issue has been issued to all concerned. Recommendation of the Committee is noted for future guidance and ensured such instances will not be repeated. (copy enclosed) Appendix I.

			<p>taken at once. The Reports of the Comptroller and Auditor General of India should be placed before the Board meeting and discussion and review should be made on the replies to be furnished by the Board on the various objections raised in the audit paragraphs. Instructions should be issued to the Officials concerned to give utmost care in dealing with the audit objections.</p>	
9	13	„	<p>The Committee regards this as another instance of the rampant corruption and mismanagement in Kerala Water Authority. In addition to providing hidden and unjustified benefit of ₹ 41.18 lakh to the contractor, the officials had caused further loss of over half a crore rupees to the Water Authority by making careless and wrongful assessment of the actual expenditure, towards road restoration. The Committee recommends that necessary steps be taken to bring to book the Officials responsible for conferring the undue benefit to the contractors. Details of action taken in this respect should be intimated to the Committee.</p>	<p>A detailed enquiry was conducted and the enquiry report placed before the board of the Authority. The board decided to recover and amount of ₹ 34.67 lakh from the contractors and recover the interest from the officers involved. Accordingly a showcause notice was issued to the contractor to recover the loss incurred. Disciplinary action has already been initiated against the responsible officers to recover the amount.</p>

(1)	(2)	(3)	(4)	(5)
10	14	Water Resources	The Committee may be informed of the reason for the departure from normal practice in these cases and of the method now being followed in the matter of inclusion/exclusion of road restoration charges in the contract amount.	Since the work was arranged on a 'turn key' basis, the cost of road restoration was also included in the probable amount of cost. The project was planned as a turn key basis to avoid bottlenecks and to complete the project within the stipulated time. Now road restoration charges is excluded from the PAC.
11	19	,,	The Committee feels that the functioning of the Kerala Water Authority has to be completely rehailed and restructured. In the present day world, it is not possible for the Government to subsidise and support public sector undertakings which run on loss. Enterprises which do not cut all wasteful expenditure and step up efficiency are doomed. Mismanagement/inefficient management of water resources and financial resources by Kerala Water Authority will only speed up the process of privatization in this field. On the other hand, the Water Authority can turn itself into a profit making	Under institutional strengthening which is a part of JBIC funded project KWA is planning complete restructuring for functioning as a profitable institution. There was remarkable progress in the collection of water charges from the defaulters during the previous year. Now computerized billing has been introduced in 3 city corporations

enterprise without troubling the public, if proper management of the available resources is done. The Officials entrusted with Government funds for various projects should be made and held responsible for each and every rupee of the public money they handle. The Committee, therefore, recommends that in case of careless of misappropriation, immediate steps should be taken for recovery of the advances.

and 10 municipalities. Strict instructions have been issued to the officers for handling the public money with financial propriety.

Government reorganized KWA into Project Divisions and Operation and Maintenance Division. It is a part of Institutional strengthening, Business Process RE-engineering of KWA is in progress within the advice of IIM, Bangalore. e-tendering was instituted in KWA. Now recovery of temporary advances is closely monitored and necessary action are being taken to settle the same in time.

(1)	(2)	(3)	(4)	(5)
12	20	Water Resources	<p>The Committee finds that the rules contained in the Public Works Accountant Code and related Government directions are not being adhered to by the Officials of the Kerala Water Authority. The Committee recommends that the management of the Kerala Water Authority should ensure that all the rules contained in the Public Works Accountant Code and other related Government directions should be strictly adhered to by the Officials of the Water Authority and any laxity in this regard should be strictly dealt with. Immediate steps should be taken to recover the amount held by the Officials who do not remit the unspent balances of the temporary advances within the time limit prescribed.</p>	<p>All officers have been instructed to maintain the required registers up to date and to settle the temporary advance with in the time limit itself. Out of the 8 Officers involved, amount was recovered from 5 officers, one officer file writ petition in court and same is pending, one officer expired and one officer retired from service and his pensionary benefits were released as per the court direction.</p>
13	21	,,	<p>The Committee further recommends that separate cells may be created by redeployment of the existing staff for ensuring timely action in the vigilance cases, and for dealing with the objections raised by Audit.</p>	<p>Vigilance Cell had been constituted.</p>

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The Committee finds that the KWA is not following any guideline or criterion for supply of materials to the contractors for the works on Water Supply Scheme, and was thus playing into the hand of the contractors. While the execution of the schemes are dragged for a number of years due to non-availability of departmental materials some other projects are completed very fast. This shows the injudicious allotment of materials for the different works and the lack of priority over the various schemes. The Committee therefore recommends that priority should be fixed for the speedy execution of works. In cases where materials are to be purchased by the contractors, the Authority should issue necessary guidelines and taken sufficient safeguards to ensure a reasonable standard of quality and cost of the materials. Wherever grants and loans are available for specific Water Supply Schemes, the Managing Director should see that delay in the work does not result in loss of the grant or any other financial aid. Priority should be given for the completion of such project.

The recommendation of the Committee is noted for future guidance.

The delay in commissioning of the above scheme has occurred since the land for the construction of OHSR was not made available to KWA by the Panchayat and for other reasons beyond the control of KWA. However the Water Supply Scheme to Koodal Panchayat and Enadimangalam Panchayat were commissioned on 20-7-2003 and 23-2-2006 respectively without constructing the OHSR i.e., by direct pumping in the distribution lines.

(1)	(2)	(3)	(4)	(5)
				<p>Conditions for ensuring the quality of materials purchased and used in various schemes for the satisfactory performance of the contract has already been included in the mother Notice Inviting Tender (NIT) (Relevant page is enclosed).</p>
15	27	Water Resources	<p>The Committee opined that when entrusting the purchase of materials with the contractors the quality of the goods purchased and used for the work should be verified. A guarantee period for the satisfactory performances of the scheme should be included in the contract. If not, a clause stating that the contractor was liable to rectify any defects in the work noticed later should be included in the tender conditions. In case where the contractors themselves purchase the material, the KWA should pay the amounts as given in the guidelines.</p>	<p>Conditions for ensuring the quality of materials purchased and used in various schemes as well as guarantee period for the satisfactory performance of the contract has already been including in the mother Notice Inviting Tender (NIT) as per clause 8.23 and clause 10.14.1 (copy enclosed) Appendix II.</p>

16	28	,,	<p>The Committee recommends that urgent measures should be taken to complete the pending projects with in a time frame and frequent revision of estimates should not be allowed.</p>	<p>ARWSS Pallickal has been completed. Steps has been completed to measure the exact work executed by the Contractor and there after the final bill will be settled and the liability will be fixed.</p>
17	30	,,	<p>The Committee finds that the Officials of the KWA are not conducting proper investigation of the terrain where the works on Water Supply Schemes are intended, before entering into contracts for works. This result in loss of lakhs of rupees to KWA. The Committee therefore recommends that action should be initiated against the Officials responsible for this lapse in investigation.</p>	<p>As per G.O. (Rt.) 555/98/Ir.D. dated 2-5-1998, Government accorded sanction to replace Pre Stressed Concrete pipes (PSC) in the water logged area in the reach between Ambalamukku-Muttada with CI pipes subject to the condition that:</p> <p>(a) The CI pipes required will be supplied by the Authority free of cost to the contractor in which case the contractor shall lay the same at their expense under contract. The surplus PSC pipes may be taken by the Authority</p>

(1)	(2)	(3)	(4)	(5)
				<p>(b) The Contractor will be paid an amount of ₹ 17,500 per meter extra for supplying and laying CI pipe in this reach</p> <p>(c) The CI pipe required will be supplied free of cost which shall be laid with specials, other materials at the expense of the contractor under the contract. The surplus 900 mm. PSC pipes will be transported and laid in the Kariam-Paudikkonam reach where the work are proposed to be taken up only in the second phase for which the contractor has to be paid a sum of ₹ 3,000 per meter as extra.</p>

18	32	Water Resources	<p>The Committee concludes that this is another instance of the lack of financial management in KWA. Financial mismanagement is leading to loss of crores of rupees, and the general public is being made to pay for this. In addition the huge subsidy being provided by Government is also being misutilised. 12000 water</p>	<p>Change of pipe was decided on the basis of a high level meeting held on 13-2-1998. Pre stressed concrete pipes are cheaper than CI pipes, approximately 3 times cheaper than cast iron pipes. Since the change of pipe was decided by a high level committee meeting convened by the then Minister for Irrigation subject to certain specified conditions (Copy enclosed), there was no additional expenditure as the PSC pipes procured were used in another reach in the second phase of the scheme. Appendix III & IV.</p> <p>Supply order was placed on M/s Anand Water Meter Manufacturing Co., Kochi as per the supply order No. KWA/HO/SP-DU/18/87 WM dated 23-5-1992 for the supply</p>
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(1)	(2)	(3)	(4)	(5)
			meters worth lakhs of rupees still remain with the Authority. If sufficient publicity with regard to the availability of water meters were given the consumers would have bought them for their use. The Committee therefore recommends that speedy steps should be taken to dispose of the remaining water meters, which are already 8 to 10 years old.	of 15 mm. (113921 nos.) 40 mm. (20 nos.) and 50 mm. (25 nos.) water meters. Out of the total quantity ordered firm did not supply 40 mm. and 50 mm. water meters ordered for PH Division, Thiruvananthapuram. Out of the total quantity of 113921 numbers ordered for various divisions quantity supplied was only 43000 nos. All except 8581 meters have already been used.
19	34	Water Resources	The Committee opines that it was wrong on the part of the Managing Director, Kerala Water Authority to issue direction for purchase of TOD meters before obtaining a reply from Government on its request for exemption from installing them. The Committee desires to be informed whether the expense of ₹ 27.72 lakh on purchasing the meters had been made good by savings in electricity charges.	All the Regional Chief Engineers have reported that most of the TOD meters purchased have already been installed at various places. However, the exact benefit accrued from the TOD meters has not been ascertained.

Thiruvananthapuram,
11th December, 2014.

K. N. A. KHADER,
Chairman,
Committee on Public Undertakings.

Appendix I



GOVERNMENT OF KERALA

No. 22066/C1/10/WRD

Water Resources (WS-C) Department,
Thiruvananthapuram,
Dated, 23.09.2010.CIRCULAR

Sub:- Reports of various Legislative Committees- Adherence of time limit in furnishing Action Taken Report- Instruction issued-reg.

The Committee on Public Undertaking held on 22.10.2010 strongly criticized the lapses on the part of the Department in furnishing replies to Audit Paras of C & AG report and Action Taken Statements on reports of the Legislative Committee within the time schedule prescribed as per the 'Hand Book of Instructions'. The Committee expressed serious concern and displeasure over the inordinate delay in furnishing reply to audit paras and reports of the Legislative Committee. So, the Committee directed that the lapses in furnishing reply within the time limit should be averted at any cost. The Committee also recommended that a regular monitoring and review mechanism should be instituted at the level of the Heads of the Departments to ensure that the replies are furnished to the Legislature in time.

In the circumstances, it is instructed that the Monitoring Committee should be constituted at the level of the Authority (KWA) for Monthly Review and Monitoring of pending audit paras and pending Legislative Committee reports. The Managing Director, Kerala Water Authority should ensure that the reply to Audit paras and Action Taken Reports on various Legislative Committee reports reach Government within the time limit prescribed as per the Handbook of Instructions. Any lapse on this account would be viewed seriously and action would be taken against those responsible. It is hereby instructed that upon receipt of the report from Legislature, the Action Taken Report should reach Government within 2 months. As regards existing pending paras, the Managing Director, Kerala Water Authority must submit replies to Government within 2 weeks positively.

L. RADHAKRISHNAN
Principal Secretary to Government

To

- 1) The Managing Director,
Kerala Water Authority.
- 2) The FM & CAO
Kerala Water Authority.
- 3) The Technical Member,
Kerala Water Authority
- 4) All Chief Engineers.

72/2015.

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 Section Officer

Appendix II

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amount worked out at department rate for laying, and all such associated works will be deducted from the contractor's bill

8.20. PRICE ESCALATION

This contract does not have provision for price escalation under any circumstances except in the case of variation in statutory taxes and levies as noted in Clause 7.9.3. Even if extension of time of completion has been granted under this contract, under any relevant provision, no escalation in price shall be admissible.

8.21. NO CLAIMS ON ACCOUNT OF FLUCTUATION OF RATES, IDLING OF LABOUR ETC.

8.21.1 No claim shall be entertained on account of fluctuation of rates of labour and materials, railway freight, income tax etc. at any stage. 8.21.2 No claim for idle labour, due to non-supply of materials by the Authority or for any other reason shall be entertained.

8.22. TESTING OF COMPLETED WORK

All tests necessary to ensure that the structure, equipment, pipe lines and fittings which form part of the work, comply with the specifications, shall be carried out at the site at the contractor's cost. First 200m laid will be tested first in order to check the quality of pipes and work executed. After that testing can be done as per the instruction of Kerala Water Authority officials. Such tests shall be carried out within one month of the completion of the work and shall satisfy the requirements included under the Technical Specifications. If the completed work or any portion thereof is found to be defective before the works executed by the contractor are taken over by the Authority, the Executive Engineer will give the contractor a notice in writing setting forth the particulars of such defects, and the contractor shall forthwith make the defective part, good or replace the same for satisfying the requirements of the contract. Should he fail to do so within the time specified by the Executive Engineer, the Executive Engineer may make good the defective part or replace the same at the cost of the Contractor and such replacement shall be carried out by the Executive Engineer to the same specifications as in the contract. In the event of contractor refusing to comply with the instructions of the Executive Engineer within the specified period, the contractor is liable to be penalized as per clause 8.10 above.

8.23. GUARANTY PERIOD

8.23.1 For L.S tenders, the guarantee period shall be 12 months after successful testing and trial running. For EPCM contracts, the guaranty period shall be 24 months from the date of completion certificate which is inclusive of the maintenance period of first 12 months from the date of such handing over. In cases where ISO specifications are allowed, the guarantee period shall be 60 months from the date of completion certificate.

8.23.2 If it becomes necessary for the contractor to replace or renew any defective portion of the work, the provision of this clause shall apply to the portion of the work so replaced or renewed until the expiration of 18 months from the date of such replacement or renewal or 24 months from the date of completion which ever is earlier. If the defects are not remedied within the notified time, the Executive Engineer may proceed to do the work at the contractor's risk and expense, but without prejudice to any other right which the Executive Engineer may have.

Tenderer

Tendering Officer

against the contractor in respect of such defects. Until the final certificate of having completed the warranty period successfully has been issued, the contractor shall have the right of entry at his own risk and expenses by himself or duly authorized representatives whose names shall have previously been communicated in writing to the Executive Engineer, at all reasonable working hours for the purpose of inspecting the work and taking notes there from and if he desires, at his own risk and expense, making any tests, subject to the approval of the Executive Engineer.

8.23.3 Any defects noticed during the warranty period shall be properly rectified to the satisfaction of the Authority by the contractor at his own risk and cost.

8.24 MAINTENANCE PERIOD AND TRAINING OF THE OPERATIONS

After the completion of the work and issue of completion certificate by the Executive Engineer, the system shall be run, operated and maintained by the contractor for a period of 12 months for EPCM contracts. The satisfactory and efficient functioning of all the components installed by the contractor for this project should be conclusively proved to the satisfaction of the Executive Engineer. During the period of maintenance, the chemicals and all other consumables and the required staff for the operations shall be supplied by the contractor at his cost. Only power charges shall be borne by the KWA. The contractor shall also train the Authority staff during the period of maintenance in running and maintaining the system independently and in an efficient manner i.e. during the 12 months maintenance period the Authority staff and contractors personnel shall be simultaneously engaged in the operation of the system.

8.25 EXTENSION OF TIME OF CONTRACT

Time is considered as the essence of this contract. Any delay due to exceptionally adverse climate conditions or other special circumstances of any kind other than default on the part of the contractor shall fairly entitle the contractor for consideration of extension of time of completion for the work with out any extra claim. However, such extension shall be at the sole discretion of the employer and without prejudice to the rights of the Authority to terminate the contract treating time as the essence of the contract. The Authority is not bound to take into account any extra ordinary circumstances unless the contractor has submitted full and detailed particulars within 15 days of the incident, which affected the progress of the work. Further, any such extension granted shall not relieve the contractor from the interest on the advance, if any, drawn by him. Nor shall he be eligible for the incentive for earlier completion of the works during the extended period. All other conditions are as per G.O (P) No.84/97/PW&T (Std. 19.8.97)

8.26 HANDING OVER OF WORK AND CLEARANCE OF SITE

For LS tenders, handing over shall be after successful testing and trial running of the facility. For EPC M tenders, the maintenance period shall start after successful completion and trial running and the handing over shall be after one year of operation and maintenance period.

8.26.1 The contractor shall hand over all works executed under the contract to the Authority complete in all respects, and to the satisfaction of the Executive Engineer at the end of satisfactory completion of the maintenance period.

8.26.2 The Executive Engineer shall determine the date on which the work shall be regarded as

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3. Sum of maximum sustained operating pressure and maximum surge pressure

4. Sum of the maximum static pressure and surge pressure subject to a maximum for any pipe and fittings incorporated.

SURGE PRESSURE:

The maximum surge pressure should be analyzed based on the data supplemented and in no case the sum of maximum operating pressure and the calculated surge pressure should exceed the allowable field hydrostatic test pressure. Computer model analysis shall be got done for the pumping line right from the pump's delivery point up to the exit point of water by any reputed institutions approved by the Authority and detailed reports of the institutions shall be furnished to the Authority.

HYDRAULIC DESIGN OF PIPE LINES

Hydraulic design of pipelines etc. where design based on Hazen William's formula as recommended by the Water Supply Manual is used, selection of the formula shall be done to get the higher design values.

Designation of fittings

The following information shall be clearly marked on each fitting.

- (1) Nominal size and weight / wall thickness
- (2) Classification based on pressure
- (3) Manufacture's name.

10.13 SUPPLY OF MATERIALS

10.14.1 SUPPLY OF PIPES

All pipes as per the scope of the work supplied should be factory tested and test certificate as per relevant specification/latest code of practice should be produced along with the pipe supplied. The testing of pipes and the authentication of test certificate should be done by an approved third party inspection agency agreeable to KWA and witnessed by the technically qualified officers of KWA, if the contract value exceeds Rs.100 lakhs and by a Departmental Officer deputed by KWA if the contract value is less than Rs. 100 lakhs. In case the pipes are imported from abroad, samples for metallurgical and mechanical tests shall be taken from pipes selected at random and the final acceptance of the pipes will be based on the results of such tests conducted at any of the reputed laboratories.

10.14.2 SUPPLY OF M.S PIPES:

LINING

M S pipes are to be lined at the contractors own arranged site located in or around the project area in the presence of Authority Officers. Shop lined pipes will not be accepted. Lining should conform to IS 1916 - 1989 or its latest edition. Minimum lining thickness, cement content, Characteristic compressive strength etc. should be as per the IS specifications. River

Tenderer

Tendering Officer

sand used should be properly cleaned and sieved and only aggregates conforming to IS 383 (or latest edition) and with required uniformity coefficient shall be used.

(a) INSIDE LINING

Clean the surface of the pipe for removing rust and other unwanted matter by sand blasting or other approved methods. Mound the pipe on the spinning machine and get the cement mortar of 1:2 applied and compacted uniformly by centrifugal action over the entire area. The line pipes shall have a smooth surface inside it and shall be free from ricks and patches after curing. At joints the pipes should be given lining of minimum thickness as per IS specification with CC 1:1 using wire mesh of approved gauge.

(b) OUTSIDE LINING WITH CEMENT MORTAR:

The surface shall be cleaned as in (a) above. A wire mesh of 50 x 50 x 3 mm or nearest size approved by the Engineer in charge shall be wound over the pipe keeping a uniform gap of 13mm from surface of pipe and fix the same by use of spacers, welding etc. in the approved manner. Cement mortar 1:3 shall be applied by guniting or other approved techniques to attain minimum thickness as per IS specifications and cured appropriately. The surface so finished shall have a fairly uniform finish and shall be free from cracks and patches.

(c) OUTSIDE LINING WITH COALTAR etc.

Outside lining with hot applied coal tar / as phaltic enamel reinforced with fiber-glass fabric yarn as per IS 10221 -1982 or its latest edition or relevant American / British standards shall be provided based upon the observed soil receptivity in Ohms -cm.

(d) ALL TENDERERS SHOULD QUOTE FOR INSIDE LINING WITH CEMENT MORTAR

Tenderers who have quoted only for lining with cement mortar inside and outside lining with hot applied coal tar (alternate offer) will not be considered.

(e) After inside lining, pipes should be cured in a curing pond for a minimum period of 7 days or as provided in the latest IS 5822. Minimum cover of pipe as per IS / Manual shall be provided. The detailed specification of site welding of joints should be furnished by the contractor with relevant IS / British / American standards. The welding electrodes used should also conform to relevant IS / British / American Standards.

10.14.3 SUPPLY OF SPECIALS

The supplied specials should be tested as per relevant specification and latest code of practice. The certificate of testing should be authenticated by the technically qualified officers of KWA or a third party agreeable to KWA.

10.14.4 SUPPLY OF EQUIPMENTS

The works to be executed under this contract shall call for procurement of a number of mechanical items and equipments. The contractor shall procure any equipment / item only after the Authority has approved the manufacturer of the same. Any item / equipment procured and used shall, as far as possible bear certification marks of BIS, BSS or such other standard

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institutions of international repute and shall be brand -new only. Further care shall be taken that any part / component of such an equipment, which require periodic replacement shall be readily available in the market. Equipments requiring periodic replacement of non standard, unpopular or odd items shall not be procured or used for the fulfillment of this contract. Equipments requiring periodic maintenance shall be identified and a preventive maintenance schedule prepared for such equipments and handed over to the Authority.

10.14. 5 ELECTRICAL INSTALLATIONS:

All electrical installations shall be done as per the IE rules and with the concurrence of the Electrical Inspectorate and /or Kerala State Electricity Board. All electrical works shall be done only through approved / licensed persons having qualification, experience and expertise to do the work. It shall be the contractor's sole responsibility to get any clearance from the Electrical Inspectorate.

10.14.6 ELECTRICAL AND ELECTRO - MECHANICAL ITEMS

All electrical and electromechanical items shall be procured from the manufactures approved by the Authority. Any item procured shall bear certification marks of BIS / BSS or another institution of international repute. For any equipment / system requiring periodic maintenance, preventive maintenance schedule shall be prepared and handed over to the Authority as part of fulfillment of this contract.

10.14.7 VALVES

(a) Valves shall be as per IS Specification. Valves shall be double -flanged valves unless specifically permitted by the Engineer in charge. It is permitted to use valves of small diameter than the pipe diameter where it is used provided the valve diameter is not less than 67% of the pipe diameter and approved tapers are provided on both sides to ensure that the changes in the cross sectional area is attained gradually. Valves shall have hand wheel except where provisions of hand wheel shall hinder some other specifications requirements. Valves of diameter 400 mm and above shall be geared / butterfly valves. Valves shall be provided with an appropriate seating so that weight is not transmitted to the adjacent pipe body. Anchoring of pipes at bends or such other locations shall be done in such a manner that the joints of the bend with the straight pipes are not Tenderer 85 Tendering Officer embedded in concrete and easy working of the joints is possible. Scour valves shall be as per the standard specification.

(b) Zero velocity valves / pressure relief valves / surge arrestors etc. shall be used wherever necessary for ensuring the safety of the pipelines. The tenderer should do the water hammer analysis of pumping main and provide appropriate water hammer devices. The system and location proposed should be specifically mentioned in technical bid. The provision of such installations shall be subject to the condition that (i) the hydraulic design of these item are approved by KWA (ii) the particular brand valve proposed to be used is a time tested one as per the testimonials furnished, (iii) the guarantee card of the system issued by the manufacturer is handed over to the Engineer in charge (iv) such guarantee issued by the manufacturer / tenderer is valid for a period of not less than 5 years of service and (v) the terms and conditions of the guarantee are accepted to KWA / Engineer in charge. Fabricated pipes and specials shall be permitted to be used, provided (i) they shall have definite advantages at the particular place proposed, (ii) they satisfy all design requirements for the efficient and long lasting performance of both hydraulic and other functions and (iii) fabrication shall be attained by the seamless

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continuous welding.

10.14.8 AIR VALVES

Suitable air valves shall be as per standard specifications conforming to relevant G&K catalogue. Air valves shall be invariably provided at essential locations inside a valve chamber and all Air valve shall be supported with same size of control valve below it. For more details in scope of work may be referred.

10.14.9 BENDS & SPECIALS

Bends may be in horizontal plane, vertical plane or in both planes and at angles varying from $11\frac{1}{4}^{\circ}$ to 90° . Care must be taken to avoid 90° bends as far as possible and in case it becomes inevitable, permission for the same must be obtained from the Engineer in charge, before laying of pipeline at that section. Bends and specials shall be procured from manufacturers whose products are time tested and have the approval of BIS. The name of manufacturer/or registered trademark and hydraulic proof test shall be marked on all such specials/fittings. As a special case, non-standard MS fabricated bends/specials will be permitted according to site conditions for non -standard bends with the approval of the Engineer in-charge of the work.

10.14.10 CAST IRON MANHOLE COVERS AND FRAMES

The basic requirements of the manhole covers to be used shall be of Heavy Duty grade and Square shape for water supply and circular for drainage work. The manhole covers shall be that manufactured from appropriate grade of cast iron, which shall not be inferior to FE 150 conforming to IS 210 (1978) or latest edition. The manufacture and workmanship shall conform to clause 5 of IS 1726 -1991, IS 210 -1978 & IS 4905 -1968 or their latest versions. Suitable locking devices including that with a Galvanized chain and lock or any such foolproof devices as approved by the Engineer before the supply and erection, the manhole cover/frame shall be provided. The minimum dimension of the manhole cover shall not be less than 60 cm and shall be coated with approved quality of materials as per IS 1726-1991. Each manhole cover and frame shall have embossed on them an identification mark i.e., the mark "KWA" to denote Kerala Water Authority together with the manufacture's name /trade mark.

10.14.11 MECHANICAL EQUIPMENT

The mechanical equipment to be installed in intake structures are as noted below:

(i) Sluice Gates

Sluice gates on the water front side of the intake structure at minimum 3 levels so as to draw the raw water from the surface of river during flood, normal and drought seasons. The sluice gates must have facility to operate from the deck slab of the pump house and necessary gear and wheel arrangements must be provided. The opening in the intake structure (the sluice gate) must be provided with cast iron gratings so that the solid or floating material will not enter inside the intake. Such grating or screens shall be easily cleanable of the debris adhering to them.

(ii) Float & Scale Type Water Level Indicator

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Water level indicator of float and scale type fabricated with corrosion resistant material approved by the Engineer in Charge must be provided in the Intake well. The location of the indicator and its design etc. must have the approval of the Engineer before its fabrication / installation. The details must be furnished before the Engineer as a submittal with detailed drawings and specification of construction. The float shall be of Copper, Brass or other corrosion resistant material approved by the Engineer, floats shall have appropriate guide for vertical movement, which shall facilitate easy vertical sliding. The guides shall be corrosion resistant material and fixed in such a manner that the floats in case of any repair, can be removed and kept back in position without disturbing the guides or easy and quick dismantling and refitting is possible.

(iii) Over head gantry crane

The pump house shall be equipped with gantry cranes of appropriate capacity and as per Volume II (scope of work). The gantry crane with pulley block shall have sufficient freedom of movement so that the entire pump house area can be covered by it. The design and other particulars of the gantry crane must be furnished to the Engineer in charge as a submittal before its procurement and got approved by him.

(iv) Pumps and Motors

The pumps and motors supplied and installed at intake structures and at any pumping stations of the project shall be of reputed make. The design of pump set shall be in such a way that energy consumption during the starting and operating conditions are minimum. Pumps shall have optimal efficiency for the specified / desired discharge as per tender through out the design life of pump set. The selection of number of pump sets shall be made in such a way that at least 50% stand by is available at any time if the number of pump sets required at each station is not otherwise specified. In case of more than one pump working in combination, either in parallel or series, the different working conditions shall be separately studied and the best energy - economy condition shall be selected. The analysis on operation conditions, the design and the performance characteristics of the pump sets shall be furnished to the Engineer in Charge as a submittal and his prior approval of the same is essential before the actual procurement and installation. In case the tenderer is not the manufacturer of a particular item, he shall disclose the manufacturer of each and every item he proposes to procure for the project. In every such case, he shall present a list of not more than two manufacturers from whom he is planning to procure the items in the order of preference. For preventive maintenance of the pumps, motors and switch gears, consumable spares for the next two years after the completion and commissioning of the work shall be provided by the contractor. The contractor shall also furnish the list of vendors from whom such spares can be procured in future.

(v) Motors, Gears etc.

Motors, gears or such other equipments having constantly moving parts while in service, if installed out door, shall invariably be kept only in metallic boxes / other protective enclosures to protect the equipment from intense sun light, rain and dust. Such items should be quite durable and free from deterioration due to environmental conditions.

(vi) Electrical Panel Boards & Switch gears

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Appendix III

GOVERNMENT OF KERALA

Abstract

Interim Augmentation of Thiruvananthapuram Water Supply Scheme
Implementation of the recommendation of the High Level Committee
held on 13.2.1998 - Progress of work in the reach between
Ambalamukku - Muttada - Supply Pipes - Orders issued:

IRRIGATION (WSC) DEPARTMENT

G.O.(Rt)No.555/98/Ir.D Dated, Thiruvananthapuram: 2.5.1998.

Read:- Minutes of the meeting held on 13.2.1998 in connection
with Thiruvananthapuram Augmentation Water Supply Scheme
convened by Minister (I & L) in the chamber of Honourable
Speaker.

ORDER

The Managing Director, Kerala Water has explained in
the meeting that Even though there are stipulations in the NIT
CI/MS Pipes shall be used in the water-logged area in the reach
in between Ambalamukku-Muttada, the contractor have supplied
PSC pipes in this water logged area. Since the PSC pipes are
suitable for the water logged area and it will damage on the
long run in the High level Committee meeting held on 13.2.1998
convened by Minister (I & L) in connection with Thiruvananthapuram
Augmentation Water Supply Scheme, it was decided, among
other things, to replace the PSC pipes in the water logged area
in the reach between Ambalamukku-Muttada with CI Pipes by the
same contractor Shri.T.O.Abraham and Company on the following
Conditions:-

- (a) The CI pipes required will be supplied by the Authority free of cost to the contractor in which case the contractor shall lay the same at their expense under contract. The surplus PSC pipes may be taken back by Kerala Water Authority.
- (b) The contractor will be paid an amount of Rs.17,500 per metre extra for supplying and laying CI pipes in this reach.
- (c) The CI pipes required will be supplied free of cost which shall be laid with specials, other materials etc at the expense of the contractor under the contract. The surplus 900 mm PSC pipes will be transported and laid in the Kariam - Poudikkonam reach where the work are proposed to be taken up only in the 2nd phase for which the contractor has to be paid a sum of Rs.3000 metre as extra.

In the above circumstances sanction is accorded to the Managing Director, Kerala Water Authority to replace the PSC pipe with CI pipes in the reach between Ambalamu Muttada in the Water logged area by the same contractor viz T.O. Abraham and Company on the terms and conditions specified above.

(By Order of the Governor)

K.S. ANNAMMA,
Additional Secretary to Govt.

To

1. The Managing Director, Kerala Water Authority, Tri
2. The Accountant General,
(A/E)/(Audit), Kerala, Thiruvananthapuram.
3. The Finance Department.
4. O/C & S/P.

Copy to:-

- C.A to Secretary (I & WS)
- C.A to Additional Secretary (WS).

Forwarded / By Order

K. S. Annamma
SECTION OFFICER.

Appendix IV

Minutes of the meeting convened by the Hon'ble Minister for Irrigation and Labour in the chamber of Hon'ble Speaker on 13.02.98 at 2.30 p.m. to review the progress of Thiruvananthapuram Interim Augmentation Water Supply Scheme.

Present.

List of participants separately attached.

1.0 The Hon'ble Minister and the Hon'ble Speaker in their introductory remarks stated that they have been getting complaints from various corners regarding the poor progress attained in the Trivandrum Interim Augmentation Scheme. The scheme which was originally conceived to be completed during March 1996 has not been completed even during 1998. He directed the officers to narrate the progress of each component with their assessment of probable date of completion in a realistic manner.

2.0 The Technical Member in charge of Managing Director stated that there are only five critical components which hamper the completion of the project namely;

1. The mouth opening works in front of raw water pump house.
2. Finishing work in the treatment plant.
3. Electrification and installation of 11 KV sub-station by TELK.
4. Construction of 110 KV sub-station at Aruvikkara by KSEB.
5. Laying 1200/1000/900 mm pumping main from Aruvikkara to Peroorkada.

2.0.1. The works remaining to be completed according to him can be completed in another 3 months time if an earnest attempt is made by all in this direction. The critical components were then discussed and the status of the same were narrated by the Chief Engineer and Superintending Engineer as follows:-

2.1. The mouth opening works in front of the raw water pump house.

2.1.1. The Chief Engineer explained that this component of the work was part of the construction of the raw water pump house itself. But since the specification for the construction of the pond etc. were changed during execution, the contractor for the construction of raw water pump house is refusing to carry out the work. The stand taken by the Authority is that the work falls within the scope of the contract entered into by him and hence, since he refused to carry out the work, the work was arranged at his risk and cost. The contractor has challenged this action of the Authority in the Court of Law. After detailed deliberations it was decided to pursue the case strongly and to proceed further in case the contractor is not prepared for a reasonable settlement. It was decided that this item of works should personally be monitored by the Chief Engineer himself, and in any case the work should be completed within the next 3 months positively.

2.2. Balance works of the Treatment Plant.

2.2.1 The Chief Engineer explained that there is practically no work at the treatment plant from April 1997 onwards. The works remaining are only supplying and spreading the filter sand and commissioning of the electrical items, arrangements for waste water disposal etc. The filter sand supplied by the firm is not according to the standard and hence has to be sieved properly.

2.2.2. The representative of the firm who was also summoned in for the discussion explained that there is labour problem at the site and the test result of filter sand from the Engineering College and the Highway Research Institute are at very much invariance with the result obtained from other reputed labs in the country. He promised that once these issues are sorted out they require hardly 2 months time for the completion of the work. The following decisions were taken.

- a. Secretary (Irrigation) and Managing Director, KWA will get in touch with the Labour Commissioner and settle the issue through a tri-partite agreement at the earliest.
- b. The sand may be got tested either through a reputed testing lab like the RRL, Pappanancode or through CESS and the contractor is bound to accept the result and act accordingly.

2.3. Construction of 11 KV sub-station by TELK.

2.3.1. The Chief Engineer explained that 90% equipments required for the work had been supplied and the firm requested for time of completion up to 28-2-98 which was sanctioned to them already. Now they have requested for further extension of time for completing and commissioning the work. It was decided that the Secretary, Irrigation may invite the representatives of TELK for discussion and the work completed at the earliest.

2.4. 110 KV sub-station by KSEB

2.4.1 The officials of the KSEB who were present in the meeting have agreed to complete the work on or before 30-4-98 without any request for further extension. Chief Secretary specifically directed KSEB to adhere to the time limit without fail.

2.5. Laying 1200/1000/900 mm pumping main from Aruvikkara.

2.5.1. The Chief Engineer explained that out of 9250 m of pipe to be supplied, laid and tested 8720 m of pipe have been supplied at site, 8130 m have been laid and 5550 m

pipe have been tested. Further 870 m of pipes have to be laid and altogether have to be tested in 6 reaches. The construction of valve chambers, permanent restoration of breach portion at Kummi, interconnection works at Peroorkkada are also to be carried out. He stated that the progress of the work at site is very slow and the contractor is demanding further payment of nearly 1 crore Rupees.

2.5.2. The Managing Director intervened at this stage and narrated the entire state of affairs. He said that the work should have been completed on 30.09.96 as per the original agreement and the time of completion had been extended upto 31.01.97 and thereafter upto 31.07.97 by imposing the liquidated damages conditions existing in the contract. In the last review meeting conducted by the Hon'ble Minister, a further extension upto 30.11.97 had been sanctioned but supplemental agreement to this effect had not been signed by the contractor till date. He stated that the contractor is eligible for a payment of only Rs.13.5 lakhs from which an amount of Rs.14 lakhs as retention and Rs.17 lakhs (apply) towards the liquidated damages are to be recovered. As such no amount is due to the contractor as on today. The liberalised condition of payment by which the contractor is claiming the payment is no more in existence and hence can not be operative. According to the reports received from the subordinate officers the total cost required for the completion of the balance work is apply Rs.217 lakhs whereas the balance amount payable to the contractor on the satisfactory completion of entire works is only Rs.200 lakhs or so. If the liabilities assessed through the Daviamony Commission's Report (Which was accepted by the Govt *in toto*), are added the liability of the contractor will be Rs.269 lakhs (apply). This being the case, the contractor is not eligible for any payment on account of this work. He also stated that he had placed the matter before the Authority and the Authority in its meeting held on 23.1.98 have resolved to refer the matter to Govt for a final direction in this matter. He circulated a detailed note elaborating the pros and cons of canceling the contract and allowing the contractor to continue, for the consideration of the meeting.

2.5.3. The works entrusted to the contractor is a turn key contract for supplying, laying, jointing, testing, commissioning the pipe line from Aruvikkara to Peroorkkada including its maintenance for a period of 2 years from the date of commissioning. Since almost 90% of the materials have been supplied and 75% of the lines has been laid, the balance work remaining to be completed is only laying some 870 m of pipeline, testing 3450 m of pipes laid, construction of valve chambers, interconnection works, restoration works at Kummi etc., commissioning of the line, and maintenance of the line for two years thereafter. The works being small and more in the nature of rectification of sub standard works no good contractor may come up for the work even if it is re-tendered and it may not be very easy to estimate the magnitude of the work involved during the maintenance period and to quote for the same. Possible delays due to legal disputes on cancellation of the work also cannot be ruled out. Therefore it was decided that in the interest of the speedy completion of the works and for the maintenance clause thereafter an all out

effort shall be made to get the work completed through the existing contractor itself, if this is possible.

2.5.4. The contractor was summoned in and negotiations were made. Even though he offered to pledge the amount payable to him on account of all other works in KWA and on the strength of which claimed an on account payment of Rs. 1 crore, it was not agreed to on account of possible legal impediment and after detailed discussions the following decisions were taken.

1. The liberalised payment as ordered by the Managing Director, KWA by letter dtd. 9.2.96 and which was suspended on account of poor and tardy performance of the contract will be restored.
2. The contractor will immediately submit detailed implementation schedule for the completion of entire work before 31.8.98 including the permanent restoration of work at Kummi at his cost. A specific condition that if any shortfall of more than 15% agreed to in the implementation schedule is noticed at any point of time the Authority reserves the right to cancel the work without any further notice to the contractor, may be incorporated in the agreement. The works at Kummi shall be scheduled to commence by March 1998 itself. He shall submit formal request for extension of time upto 31.8.98 including an undertaking to engage six competent engineers with their names and addresses permanently at site (which he is otherwise bound as per the agreement)

The Superintending Engineer may sanction the request and enter into necessary supplementary agreement in line with the stipulations of the original agreement.

3. Once the agreement is executed an "on account bill" for the work limiting to Rs. 50 lakhs shall be paid to the contractor after due verification as was done earlier.
4. Further on account bills limiting the actual cost of work shall be made only after the Rs. 50 lakhs payment so made has been fully expended and the stipulated progress attained.
5. The contractor fully agreed that he shall not raise the claim of non payment of other works taken up by him as a plea for any delay for this work.
6. The liabilities of the contractor as arising from the Daivamyam Commission report would be separately taken up with the contractor.

2.5.5 It was decided that separate orders would be taken from Govt regarding these liberalised conditions (as stated in para 2.5.4) sought to be extended to the contractor before further action is taken on these decisions.

3.0. 900/600/500 mm Perambakkada-Manvila Main

3.1. The Hon'ble Speaker enquired regarding the progress of the above work especially in the reach in between Ambalanmukku -Muttada where the traffic had been completely blocked. He wanted the entire work in this reach to be completed before 31.3.98 and the road handed over to PWD for restoration.

3.2. The Managing Director explained that the works are progressing satisfactorily but the question of laying CI pipes for length of 560 m instead of the PSC pipes already supplied at site is under dispute with the contractor. Even though there are stipulations in the NIT that CI/MS pipes shall be used in the water logged area, the contractor have supplied PSC pipes in this water logged area. The representatives of the company undertaking the work explained that they started supplying the pipes only after getting the approval for the drawings from the Chief Engineer. There is no specific mention in the NIT regarding the laying of such a lengthy portion with CI pipe and as such they have not included provisions for the same in their contract. They have fully supplied the entire material required for the work and at this stage they cannot and are not prepared to replace this portion with CI. However he suggested the following options as a gesture of goodwill to the KWA and Govt;

- a. The CI pipes required may be supplied by the Authority free of cost in which case they shall lay the same at their expense under the contract. The surplus PSC pipes may be taken back by KWA.
- b. They may be paid an amount of Rs. 17,500 per metre extra for supplying and laying CI pipes in this reach.
- c. The CI pipes required may be supplied free of cost which shall be laid with specials, other materials etc. at their expense under the contract. The surplus 900 mm PSC pipes will be transported and laid in the Kariam-Poudikkonam reach where the works are proposed to be taken up only in the 2nd phase for which the contractor has to be paid a sum of Rs. 3000 per metre as extra.

3.3. The various options were discussed in detail and it was finally decided to divert 560 m of 900 mm DI pipes procured for the sewerage scheme and to issue to the contractor free of cost and to accept the 3rd proposal contained under para 'c' above after obtaining requisite Govt orders in the matter. Necessary supplemental agreement shall be executed and the work shall be completed before 31.3.98 as already directed.

4.0. In conclusion, the Hon'ble Minister (Irrigation), Hon'ble Speaker and Chief Secretary directed that the commissioning of the scheme should not be delayed further on any account. It was decided that progress of the work will be reviewed by the Chairman after the Authority meeting every month.

50. The meeting concluded at 5.30 p.m.

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sd/

Secretary
Irrigation & Water Supply

Copy

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Section officer

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