Report of the
Comptroller and Auditor General of India

on

General and Social Sector
for the year ended March 2019

लोकहितार्थ सत्यनिष्ठा

Dedicated to Truth in Public Interest

Government of Tamil Nadu
Report No. 4 of 2020

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PREFACE

This Report for the year ended March 2019 has been prepared for submission to the Governor of Tamil Nadu under Article 151 of the Constitution of India.

The Report contains significant results of the Performance Audit and Compliance Audit of the departments of the Government of Tamil Nadu under the General and Social Services including departments of Health & Family Welfare, Home, Prohibition & Excise, Municipal Administration & Water Supply, Revenue & Disaster Management, School Education and Social Welfare & Nutritious Meal Programme.

The instances mentioned in this Report are those, which came to notice in the course of test audit for the period 2018-19 as well as those which came to notice in earlier years but could not be reported in the previous Audit Reports; instances relating to the period subsequent to 2018-19 have also been included, wherever necessary.

The audit has been conducted in conformity with the Auditing Standards issued by the Comptroller and Auditor General of India.

OVERVIEW

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This Report contains one Performance Audit on Sewage Management in Chennai Metropolitan Area (CMA), Compliance Audit on two schemes/programmes *viz*., 'Implementation of Chief Minister's Comprehensive Health Insurance Scheme' and 'Solid Waste Management in Coimbatore City Municipal Corporation' and 15 compliance audit paragraphs.

PERFORMANCE AUDIT ON 'SEWAGE MANAGEMENT IN CHENNAI METROPOLITAN AREA'

Chennai Metropolitan Water Supply and Sewerage Board (CMWSSB) is the agency responsible for sewage management in Greater Chennai Corporation (GCC) areas and also the nodal agency for sewage management in other local bodies within CMA. Sewage management includes construction, operation and maintenance of sewer lines, Sewage Pumping Stations, Sewage Treatment Plants, etc., and also includes septage handling in unsewered areas.

Government made substantial investment in the expansion of the sewerage system in Chennai Metropolitan Area. Slow pace of project implementation and lack of comprehensive planning would adversely compact the prospect of achieving 100 *per cent* safe disposal of sewage in the near future.

- As of March 2019, only 52 *per cent* of the sewage generated in CMA was collected by the existing sewerage system, leaving the remaining 48 *per cent* uncollected. Further, only 88 *per cent* of the collected sewage was treated before being let out.

  (Paragraph 2.1.6)

- Underground Sewerage System (UGSS) is provided in the entire erstwhile Chennai Corporation areas. But, UGSS were not provided in 31 out of the 42 areas newly added to the city in 2009, seven out of the eight municipal towns, 10 of the 11 Town Panchayats and all the 10 Panchayat Unions.

  (Paragraph 2.1.8)

- The prospect of achieving the goal set in National Urban Sanitation Policy and Tamil Nadu Vision 2023 for 100 *per cent* safe disposal of sewage was bleak. Deficient planning, lack of coordination with line departments, unjustified delays in tender approval and issues in contract management caused abnormal delays in completion of projects underway for expansion of sewer networks.

  (Paragraph 2.1.8.2)

- An estimated 242.73 million liter per day (mld) of raw sewage illegally entered storm water drains and drained into water bodies such as Adyar river, Buckingham Canal, Cooum river, etc. This had resulted in high pollution load of the water bodies in CMA. Projects sanctioned to address this issue had limited success.

  (Paragraph 2.1.10)

- Inadequate treatment capacity of sewage treatment plants (STP), non-functioning of primary clarifier units in two STPs and deficiencies in testing of treated water had adverse impact on the quality of sewage treatment.

(Paragraph 2.1.11)

- The achievement in recycling and reusing treated water was only 6.5 *per cent* of the sewage generated against the prescribed benchmark of 20 *per cent*.

(Paragraph 2.1.12)

- Five STPs without biogas power generation plant and three in which the plants were non-functional released an estimated 5.7 million cubic metre of environmentally dangerous methane gas per annum into atmosphere and simultaneously CMWSSB lost an opportunity to save on electricity bills.

(Paragraph 2.1.13)

Audit observations on Compliance Audit

We observed several deficiencies in critical areas, which had adverse impact on effective functioning of Government departments/organisations. Key audit findings of compliance issues are as under:

Compliance Audit on 'Implementation of Chief Minister's Comprehensive Health Insurance Scheme'

An audit of 'Implementation of Chief Minister's Comprehensive Health Insurance Scheme' revealed that there was no mechanism for verification/periodic updation of family income and exclusion of ineligible families. Marginalised categories like orphans, migrant workers and Sri Lankan refugees were not adequately enrolled as a suitable system was not put in place. Quality of medical care could not be fully ensured due to non-insisting of the mandatory NABH accreditation. Instances of delayed pre-authorisation showed an increasing trend leading to delay and possible denial of treatment to needy patients.

(Paragraph 3.1)

Compliance Audit on 'Solid Waste Management in Coimbatore City Municipal Corporation'

An audit of 'Solid Waste Management in Coimbatore City Municipal Corporation' revealed that Coimbatore City Municipal Corporation underestimated the quantity of solid waste generated in the city due to incorrect adoption of population base. Further, failure to conduct proper survey added to the erroneous estimate of solid waste generation. The persistent issue of insufficient processing capacity, and the failure to achieve optimum utilisation of the available capacity resulted in processing of only

49 *per cent* of the collected waste, against the targeted 79 *per cent.* Other issues that impacted the solid waste management activities of Coimbatore City Municipal Corporation were (i) poor achievement in at-source segregation of solid waste, (ii) manual handling of garbage, (iii) non-adherence to safety protocols, (iv) violation of statutory provisions relating to control of water and air pollution, (v) failure to collect solid waste user charges, etc.

(Paragraph 3.2)

Compliance Audit Paragraphs

Failure of Natham Town Panchayat of Dindigul district to disallow fraudulent claims made by contractor resulted in payment of ₹ 4.12 lakh for non-existent borewell and RCC staircase.

(Paragraph 3.3.1)

Failure to review the contracted maximum demand requirement by six hospitals and Anna Centenary Library had resulted in an avoidable payment of electricity charges of ₹ 7.07 crore during 2016-19.

(Paragraph 3.4.1)

Lapses in contract management in the procurement of CCTV based traffic monitoring system resulted in unfruitful expenditure of ₹ 2.70 crore.

(Paragraph 3.4.2)

Failure of three municipalities *viz*., Chidambaram, Jayankondam and Kodaikanal to utilise the machineries procured for processing solid wastes resulted in unfruitful expenditure of ₹ 3.94 crore.

(Paragraph 3.4.3)

Failure of the Directorates of School Education and Elementary Education in verifying the correctness of claims preferred by Textbook Corporation and the failure of Director of School Education in detecting errors in the textbooks had resulted in an avoidable expenditure of ₹ 23.27 crore.

(Paragraph 3.4.4)

Lack of commitment on the part of Government and casual handling of expensive high tech systems of Anna Centenary Library by the Director of Public Libraries had resulted in ₹ 7.98 crore on creation of the assets largely unfruitful.

(Paragraph 3.4.5)

Deficient planning, hasty implementation, delays in land alienation and construction and non-provision of staff had resulted in non-functioning and partial functioning of Working Women Hostels and consequent avoidable expenditure of ₹ 0.98 crore and blocking of ₹ 2.09 crore in idle assets.

(Paragraph 3.4.6)

Failure to correctly assess the revenue potential had resulted in loss of revenue of ₹ 27.87 lakh to Thanjavur City Municipal Corporation from the lease of bus entry fee collection.

(Paragraph 3.5.1)

Delay by Revenue authorities and Government in revising the lease rent as per RSO 24-A in respect of land leased to private industries had resulted in short collection of revenue of ₹ 8.56 crore.

(Paragraph 3.5.2)

Injudicious analysis of tenders by Greater Chennai Corporation had resulted in undue benefit of ₹ 1.41crore to contractors.

(Paragraph 3.6.1)

Inclusion of inadmissible component and acceptance of increased daily wage rates payable to outsourced sanitary workers, without authority, by Mayiladuthurai Municipality resulted in excess expenditure of ₹ 51.31 lakh.

(Paragraph 3.6.2)

RAMO, Madurai and DMRHS (ESI) did not follow the prescribed medicine indenting procedure, based on the number of patients, resulting in locking up of Government funds of ₹ 16.39 crore in the form of excess procured medicines.

(Paragraph 3.7.1)

Improper planning and failure to assess the actual building requirements by Rajiv Gandhi Government General Hospital and Director of Medical Education led to idling of three structurally completed multi-storeyed buildings constructed at a cost of ₹ 55.33 crore thereby depriving improved medical care to the needy patients.

(Paragraph 3.7.2)

In violation of codal provisions and State Disaster Response Fund guidelines, Fire and Rescue Service Department withdrew the money from State Disaster Response Fund without any need forecast, leading to blocking of ₹ 24.96 crore in saving bank account and consequent loss of interest of ₹ 1.24 crore.

(Paragraph 3.7.3)

Failure of Director of Social Welfare to secure the land allotted by Government and initiate immediate legal action to evict the encroachment had resulted in continued encroachment of land worth ₹ 2.27 crore.

(Paragraph 3.8.1)

CHAPTER I
INTRODUCTION

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INTRODUCTION

1.1 About this Report

This Report of the Comptroller and Auditor General of India (CAG) on Government of Tamil Nadu (GoTN) relates to matters arising from Performance Audit of selected programmes and activities and Compliance Audit of Government departments, Autonomous Bodies and Local Bodies.

The primary purpose of the Report is to bring important results of audit to the notice of the State Legislature. Auditing standards issued by the CAG require that the materiality level for reporting should be commensurate with the nature, volume and magnitude of transactions. The audit findings are expected to enable the Executive to take corrective actions as also to frame appropriate policies and directives that will lead to improved financial management of the organisations, thus, contributing to better governance.

Compliance Audit refers to examination of transactions relating to expenditure, receipts, assets and liabilities of audited entities to ascertain whether provisions of the Constitution of India, applicable laws, rules, regulations and various orders and instructions issued by the competent authorities are being complied with.

Performance Audit examines the extent to which objectives of an organisation, programme or scheme are achieved economically, efficiently and effectively.

This Chapter provides profile of audited entities, planning and extent of audit and follow-up of Audit Reports. Chapter II of this Report deals with findings of Performance Audit and Chapter III deals with findings of Compliance Audit of various departments, Autonomous Bodies and Local Bodies.

1.2 Profile of Audited Entities

There are 37 departments in the State at the Secretariat level, headed by Additional Chief Secretaries/Principal Secretaries/Secretaries who are assisted by Commissioners/Directors and Subordinate Officers. Of these, 23 departments including 16 Public Sector Undertakings and 1,744 Autonomous Bodies/Local Bodies, falling under these departments, were under the audit jurisdiction of the Principal Accountant General (General and Social Sector Audit), Tamil Nadu.

A comparative position of expenditure incurred by the Government during the year 2018-19 and in the preceding four years is given in **Table 1.1**.

Abbreviations used in this report are listed in the Glossary at Page 130

Table 1.1: Comparative position of expenditure

(₹ in crore)

Disbursements	2014-15	2015-16	2016-17	2017-18	2018-19
Revenue expenditure	***1,28,828***	***1,40,993***	***1,53,195***	***1,67,874***	***1,97,200***
General services	41,655	45,512	51,452	60,451	72,450
Social services	50,349	54,806	55,297	59,790	70,202
Economic services	26,843	29,943	33,980	36,162	39,669
Grants-in-aid and contributions	9,981	10,732	12,466	11,471	14,879
Capital expenditure	***17,803***	***18,995***	***20,709***	***20,203***	***24,311***
Loans and advances	***4,319***	***2,331***	***26,046***	***6,517***	***6,478***
Repayment of public debt	***6,488***	***6,605***	***8,200***	***8,991***	***15,064***
Contingency fund	***Nil***	***19***	***Nil***	***Nil***	***10***
Public account	***1,59,384***	***1,77,442***	***1,73,007***	***1,84,209***	***2,23,930***
Total	**3,16,822**	**3,46,385**	**3,81,157**	**3,87,794**	**4,66,993**

(Source: Finance Accounts for the respective years)

1.3 Authority for Audit

The authority for audit by the CAG is derived from Articles 149 and 151 of the Constitution of India and the Comptroller and Auditor General's (Duties, Powers and Conditions of Services) Act, 1971. The CAG conducts audit of expenditure of the departments of GoTN under Section 13[1] of the CAG's (DPC) Act, 1971. The CAG is the sole auditor in respect of 37 Autonomous Bodies which are audited under Sections 19(2)[2], 19(3)[3] and 20(1)[4] of the said Act. Audit of Government companies is also conducted under Section 19(1) of the CAG's (DPC) Act. In addition, the CAG conducts, under Section 14[5] of the Act, audit of other Autonomous Bodies**,** which are substantially funded by the State Government. Audit of Urban Local bodies (ULBs) are conducted under Section 14(2) of the CAG's (DPC) Act, 1971. The CAG also provides technical guidance and support to the Local Fund Audit for audit of Local Bodies. The principles and methodologies for various audits are

1 Audit of (i) all transactions from the Consolidated Fund of the State, (ii) all transactions relating to the Contingency Fund and the Public Account and (iii) all trading, manufacturing, profit & loss accounts, balance sheets & other subsidiary accounts.

2 Audit of the accounts of Corporations (not being Companies) established by or under law made by the Parliament in accordance with the provisions of the respective legislations.

3 Audit of the accounts of Corporations (not being Companies) established by or under law made by the State Legislature at the request of the Governor.

4 Audit of accounts of any body or authority on the request of the Governor on such terms and conditions as may be agreed upon between the CAG and the Government.

5 Audit of (i) all receipts and expenditure of a body/authority substantially financed by grants or loans from the Consolidated Fund of the State and (ii) all receipts and expenditure of any body or authority where the grants or loans to such body or authority from the Consolidated Fund of the State in a financial year is not less than ₹ 1 crore.

prescribed in the Regulations on Audit and Accounts (Amendments) 2020 and CAG's Auditing Standards, 2017.

1.4 Planning and conduct of audit

Audit process starts with the risk assessment of the Departments/organisations as a whole and that of each unit based on expenditure incurred and its type, criticality/complexity of activities, level of delegated financial powers, assessment of internal controls, concerns of stakeholders and the likely impact of such risks. Previous audit findings are also considered in this exercise. Based on this risk assessment, the frequency and extent of audit are decided. An Annual Audit Plan is formulated to conduct audit on the basis of such risk assessment.

After completion of audit of units, Inspection Reports (IRs) containing audit findings are issued to the Heads of the audited entities. The entities are requested to furnish replies to the audit findings within one month of receipt of the IRs. Whenever replies are received, audit findings are either settled or further action for compliance is advised. Important audit observations pointed out in these IRs are processed for inclusion in the CAG's Audit Reports, which are submitted to the Governor of Tamil Nadu under Article 151 of the Constitution of India for being laid before the State Legislature.

1.5 Response to Audit

1.5.1 Draft Paragraphs and Performance Audit

One draft Performance Audit and 17 draft Paragraphs were forwarded demi-officially to Additional Chief Secretaries/Principal Secretaries/ Secretaries of the departments concerned between May 2019 and January 2020, requesting them to furnish their responses within six weeks. Government replies for one Performance Audit and 10 draft Paragraphs were received. The replies received are suitably incorporated in the Report. Replies of Heads of Department and the views expressed by the representatives of the Government during Exit Conferences/Exit meetings were also considered while finalising the Report.

1.5.2 Pendency of Inspection Reports

A review of the IRs issued up to 30 September 2018 revealed that 19,215 paragraphs relating to 4,464 IRs remained outstanding for more than six months at the end of March 2019, as detailed in **Appendix 1.1**.

Large pendency of IRs was indicative of the fact that Heads of Offices and Heads of Departments did not initiate appropriate and adequate action to rectify the defects, omissions and irregularities pointed out in the IRs.

1.6 Recommendations

This Report contains specific recommendations on a number of issues involving non-observance of the prescribed internal procedure and systems, compliance with which would help in promoting good governance and better oversight on implementation of departmental programmes and objectives at large. The State Government is requested to take cognizance of these recommendations and take appropriate action in a time bound manner.

1.7 Follow-up on Audit Reports

The Committee on Public Accounts of the Legislature prescribed a time limit of two months from the date of placement of the Audit Reports for furnishing Explanatory Notes by Government departments on the audit observations included in the Audit Report. The Explanatory Note should indicate the corrective action taken or proposed to be taken by them.

The position of pendency of paragraphs/Performance Audits, for which Explanatory Notes were not received as of 31 December 2019 is shown in **Table 1.2**.

Table 1.2: Paragraphs/PAs for which Explanatory Notes not received

Details of number of Paragraphs/Performance Audits for which Explanatory Notes are awaited	Audit Report		
	Up to 2014-15	2015-16	2016-17
General and Social Sector	38	28	8
Local Bodies	96	18	9

Further, Government departments are to submit Action Taken Notes (ATNs) on the recommendations of PAC. As of December 2019, Government departments did not furnish ATNs on 1,799 recommendations made by PAC in respect of Audit Reports on Civil, State Finances, General and Social Sector and Local Bodies pertaining to the period 1973-74 to 2015-16.

CHAPTER II

PERFORMANCE AUDIT

CHAPTER II

PERFORMANCE AUDIT

This Chapter contains findings of a Performance Audit on Sewage Management in Chennai Metropolitan Area.

MUNICIPAL ADMINISTRATION AND WATER SUPPLY DEPARTMENT

2.1 Sewage Management in Chennai Metropolitan Area

Executive Summary

Government made substantial investment in the expansion of the sewerage system in Chennai Metropolitan Area (CMA). Sluggish pace of project implementation and lack of comprehensive planning marred the prospect of achieving 100 per cent safe disposal of sewage in the near future. Audit came across multiple failures in realising the right value for the money spent due to lack of concern for economy, deficient planning and inefficiency in project implementation.

- ***The prospect of achieving the goal set in National Urban Sanitation Policy and Tamil Nadu Vision 2023 for 100 per cent safe disposal of sewage was bleak.***
- ***As of March 2019, only 52 per cent of the sewage generated in CMA was collected by the existing sewerage system, leaving the remaining 48 per cent uncollected. Further, only 88 per cent of the collected sewage was treated before being let out.***
- ***Underground Sewerage System (UGSS) is provided in the entire erstwhile Chennai Corporation areas. But, UGSS were not provided in 31 out of the 42 areas newly added to the city in 2009, seven out of the eight municipal towns, 10 of the 11 Town Panchayats and all the 10 Panchayat Unions.***
- ***Deficient planning, lack of coordination with line departments, unjustified delays in tender approval and issues in contract management caused abnormal delays in completion of projects underway for expansion of sewer networks.***
- ***An estimated 242.73 million litre per day (mld) of raw sewage illegally entered storm water drains and drained into water bodies such as Adyar river, Buckingham Canal, Cooum river, etc. This had resulted in high pollution load of the water bodies in CMA. Projects sanctioned to address this issue had limited success.***

- ***Inadequate treatment capacity of sewage treatment plants (STP), non-functioning of primary clarifier units in two STPs and deficiencies in testing of treated water had adverse impact on the quality of sewage treatment.***
- ***The achievement in recycling and reusing treated water was only 6.5 per cent of the sewage generated against the prescribed benchmark of 20 per cent.***
- ***Five STPs without biogas power generation plant and three in which the plants were non-functional released an estimated 5.7 million cubic metre of environmentally dangerous methane gas per annum into atmosphere and simultaneously CMWSSB lost an opportunity to save on electricity bills.***

2.1.1 Introduction

Sewage means contents of water closets, latrines, bathrooms, kitchen, stables, cattle-sheds and other like places, and includes trade effluent. Sewage is the single major source of water resource contamination, contributing 75 *per cent* of the pollution load to water bodies and thereby adversely impacts human health and aquatic life.

Sewerage system means the system for collection, treatment and disposal of sewage. Sewerage system consists of house service connections, sewer lines, lift stations, pumping stations and sewage treatment plants. The objective of the sewerage system is to ensure that the sewage discharged by the community is properly collected, transported and treated to safe levels, and disposed off or reused without causing any health or environmental problems.

2.1.1.1 Chennai Metropolitan Area

The Chennai Metropolitan Water Supply and Sewerage Board (CMWSSB), established in 1978, provides safe drinking water and safe disposal of sewage in Greater Chennai Corporation (GCC), spread over an area of 426 sq.km. Chennai Metropolitan Area (CMA), which encompasses GCC, is spread over an area of 1,189 sq.km in three districts *viz*., the whole of Chennai district, and parts of Kancheepuram and Tiruvallur districts. Other than GCC, 16 local bodies[1] in Kancheepuram district and 13 local bodies[2] in Tiruvallur district fall within CMA.

In 2009, Government of Tamil Nadu (GoTN) expanded Chennai Corporation's jurisdiction by annexing 42 adjacent local bodies which include nine municipalities, eight town panchayats and 25 village panchayats. The newly added areas of the City came under the jurisdiction of CMWSSB from October 2011.

[1] Five municipalities, seven town panchayats and four panchayat unions.

[2] One Municipal Corporation (Avadi), two municipalities, four town panchayats and six panchayat unions.

While it is the sole responsibility of CMWSSB to provide sewage management services in the expanded GCC area, in respect of other local bodies in CMA, CMWSSB is the nodal agency for implementing sewerage schemes.

2.1.1.2 Sanitation Policy and goals

The National Urban Sanitation Policy (NUSP), 2008, emphasises the need for spreading awareness about sanitation through an integrated city-wide approach and recommends that each State and City need to formulate their own sanitation strategy and respective City Sanitation Plan in overall conformity to the National Policy. Government of India (GoI) fixed a target of treating 69 *per cent* of sewage by 2030 at all India level. In respect of urban areas, NUSP has set a goal that 100 *per cent* of human excreta and liquid wastes from all sanitation facilities including toilets must be disposed of safely. GoTN, in its Vision 2023 Plan, envisaged 100 *per cent* safe sanitation in all local bodies by 2023**.**

2.1.2 Organisational setup

The Additional Chief Secretary to the Government, Municipal Administration and Water Supply (MAWS) Department is the Head of the Department. Managing Director, CMWSSB is the executive head of CMWSSB assisted by Engineering Director, Executive Director, Finance Director and Chief Engineers. Organisational chart of CMWSSB is given in **Appendix 2.1**.

2.1.3 Audit Objective

Audit objectives were to assess whether:

- Adequate plans were formulated to augment sewage collection capacity, transportation, treatment and disposal system;
- Sewage discharged from communities were properly collected, transported and treated to the required degree in sewered and unsewered areas and
- Treated water was reused as a resource or safely disposed of to protect public health and environment.

2.1.4 Audit Criteria

Audit criteria were derived from the following sources:

- The Water (Prevention and Control of Pollution) Act, 1974;
- The Environment (Protection) Act, 1986;
- The Chennai Metropolitan Water Supply and Sewerage Act, 1978;
- National Urban Sanitation Policy 2008;
- Central Public Health and Environmental Engineering Organisation (CPHEEO) Manual and Handbook;

- Notification/Orders of Central Pollution Control Board and Tamil Nadu Pollution Control Board (TNPCB) and
- Government orders, Circulars and Master Plan of CMWSSB.

2.1.5 Scope and methodology of Audit

Audit was conducted from April to September 2019 covering five years period from 2014-15 to 2018-19. An Entry Conference was held on 10 April 2019 with the Additional Chief Secretary, MAWS Department. Audit objectives, criteria, methodology and sampling were discussed. On conclusion of the Audit, an Exit Conference was held with the Additional Chief Secretary, MAWS Department on 12 December 2019 to discuss the audit findings. This report was prepared after considering the deliberations in the meeting and the reply furnished (April 2020) by GoTN.

Audit examined the records at the Secretariat, headquarters and sampled field units[3] of CMWSSB and sampled local bodies[4]. Sampling was done by using simple random sampling method. List of sampled units is given in **Appendix 2.2**.

2.1.6 Physical Performance

The growth in sewerage network in CMWSSB during last 40 years was as given in **Table 2.1**.

Table 2.1: Sewer network of CMWSSB

Details	As of 1979	As of 2019	Percentage increase over 40 years
Sewer consumers (Nos.)	1,14,000	9,72,833	*753*
Length of sewer mains (km)	1,223	5,200	*325*
Pumping stations (Nos.)	58	266	*358*
Treatment Plants (Nos.)	3	12	*300*
Treatment capacity (Million litre per day (mld))	57	727	*1,175*

(Source: CMWSSB)

The growth in sewer network outpaced the urban population growth rate of 180 *per cent* in the State. However, the achievements in terms of collection of sewage from source, treatment of sewage and safe disposal of treated sewage continued to languish as discussed below.

The CPHEEO estimated (2013) a requirement of 135 litres per capita per day (LPCD) of water in areas with Underground Sewerage System (UGSS) and 90 LPCD in areas without UGSS.

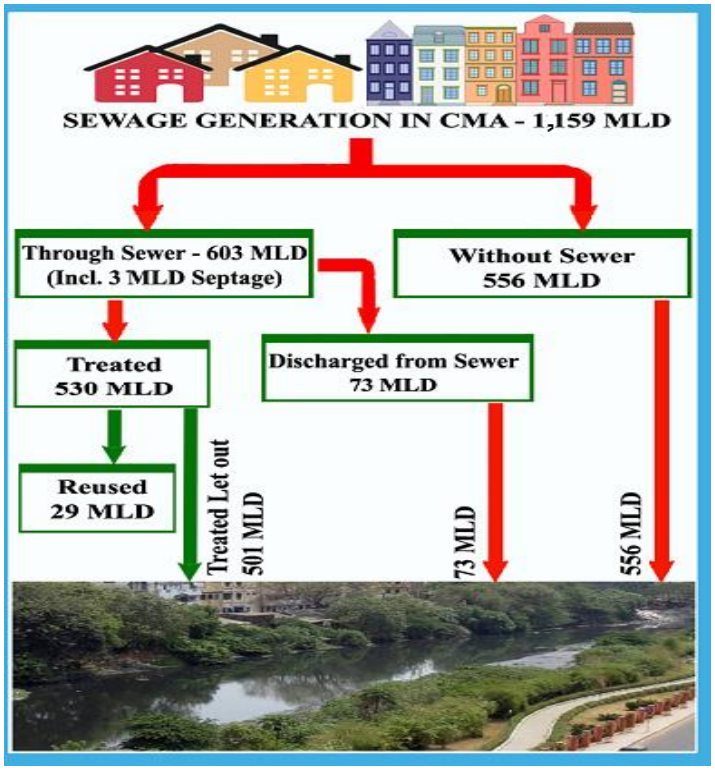
According to an estimate of CMWSSB, the sewage generated would be 85 *per cent* of the water consumed by residents. Based on the projected

[3] All Sewage Treatment Plants (12) and 10 *per cent* of Sewage Pumping Stations (28).

[4] Two Municipal Corporations, one Municipality, three Town Panchayats and three Panchayat Unions.

population data and the estimated sewage generation, Audit worked out that as of March 2019, only 52 *per cent* of the sewage generated in CMA was collected by the existing sewerage system, leaving the remaining 48 *per cent* uncollected. GoTN replied to Audit that the collection of 52 *per cent* sewage was based on theoretical calculations. The reply was untenable as the quantity of sewage generation is always worked out theoretically based on a scientific formula devised by CPHEEO; and similar theoretical calculations are routinely used by CMWSSB for calculation of sewage generated in different parts of the city. The fact that 48 *per cent* of the waste remained uncollected, was an indicator of the enormity and seriousness of the issue. Further, only 88 *per cent* of the collected sewage was treated before being discharged. **Exhibit 2.1** provides an insight into the physical performance in terms of sewage management in CMA.

Exhibit 2.1: Physical Performance



(Source: Information collected from CMWSSB)

2.1.6.1 Performance in terms of outcome indicators

Improved water quality in water bodies in and around the city is an indicator of better sewage management. However, as per Tamil Nadu Pollution Control Board's (TNPCB) water sample test reports, the water quality in the water bodies of CMA did not register significant improvement between 2006-07 and 2016-17 as given in **Table 2.2**.

Biological Oxygen Demand (BOD), which should not exceed three mg/litre in a river with bathing quality water, was in the range of 35 to 51 mg/litre in the rivers, streams and canals crisscrossing CMA. Similarly, Chemical Oxygen Demand (COD), which should be below 20 mg/litre in unpolluted surface

water was in the range of 151 to 363. Total Suspended Solids (TSS), a measure of turbidity had also increased over the ten year period.

Table 2.2: Water quality in city's water bodies

(Mg/L)

River/Stream/Canal	BOD		COD		TSS	
	2006-07	2016-17	2006-07	2016-17	2006-07	2016-17
Adyar	27	35	148	151	40	57
Cooum	49	45	212	363	63	94
Buckingham canal	58	51	250	236	87	76
OtteriNullah	41	50	199	155	80	77

(Source: CMWSSB)

The largely unchanged quality of water in the rivers, streams and canals of CMA pointed to poor outcome of sewage management in CMA despite substantial investment and increase in the sewerage network.

2.1.7 Financial Performance

Under the Chennai Metropolitan Water Supply and Sewerage Act, 1978, the Board of CMWSSB, headed by the Minister concerned, has full powers on financial matters including approval of budget and expenditure sanction. In addition to its own revenue, CMWSSB receives funds under various schemes[5] of GoTN and GoI for implementation of sewerage projects. Local Bodies also meet a part of the cost of projects based on their financial position.

The capital budget of CMWSSB, source of funds and actual expenditure during 2014-19 are given in **Table 2.3**.

Table 2.3: Details of Budget, Sources and Application of funds - CMWSSB

(₹ in crore)

Year	Budget Estimate (BE) for projects	Fund actually received for projects (source-wise)				Actual expenditure (percentage to BE)
		GoI	GoTN	Loans	Total	
2014-15	655.94	33.30	275.23	8.36	316.89	106.70 (*16*)
2015-16	925.93	0.10	359.82	0.04	359.96	240.96 (*26*)
2016-17	718.27	26.00	327.23	0	353.23	233.05 (*32*)
2017-18	427.14	60.85	256.14	3.62	320.61	244.54 (*57*)
2018-19	377.92	50.98	159.01	50.00	259.99	419.16 (*111*)
Total	**3,105.20**	**171.23**	**1,377.43**	**62.02**	**1,610.68**	**1,244.41 (*40*)**

(Source: CMWSSB)

[5] Chennai Mega City Development Mission, Tamil Nadu Investment Promotion Programme, Japan International Cooperation Agency (JICA) funded schemes, Tamil Nadu Urban Development Project-III, Tamil Nadu Sustainable Urban Development Project, Smart City Mission, Infrastructure and Amenities Fund, Integrated Cooum River Eco Restoration Projects, Jawaharlal Nehru National Urban Renewal Mission (JNNURM), Atal Mission for Rejuvenation and Urban Transformation (AMRUT), etc.

As could be seen from **Table 2.3**, during 2014-19, CMWSSB could spend only 40 *per cent* of the budgeted outlay on capital projects. Further, the expenditure of ₹ 1,244.41 crore on projects during the period was only 77 *per cent* of the actual receipt of ₹ 1,610.68 crore from funding sources for project implementation.

Audit found that all projects of CMWSSB witnessed delay as discussed in this report, leading to poor utilisation of project funds.

2.1.8 Expansion of sewerage network

The Action Plan for Chennai City Sewerage network under Twelfth Five Year Plan envisaged provision of sewerage network in all areas of GCC by 2017. Audit, however, found that as of November 2019, while UGSS was provided in the entire erstwhile Chennai Corporation areas, only 11 of the 42 areas newly added to the city in 2009 were provided with UGSS. Further, only one out of the eight Municipalities/Corporations in CMA had a functional UGSS. Areas under only one of the 11 Town Panchayats and none of the 10 Panchayat Unions had a functional UGSS as of September 2019. Audit found issues in comprehensive planning and funding, and poor pace of project execution.

2.1.8.1 Planning for sewage schemes

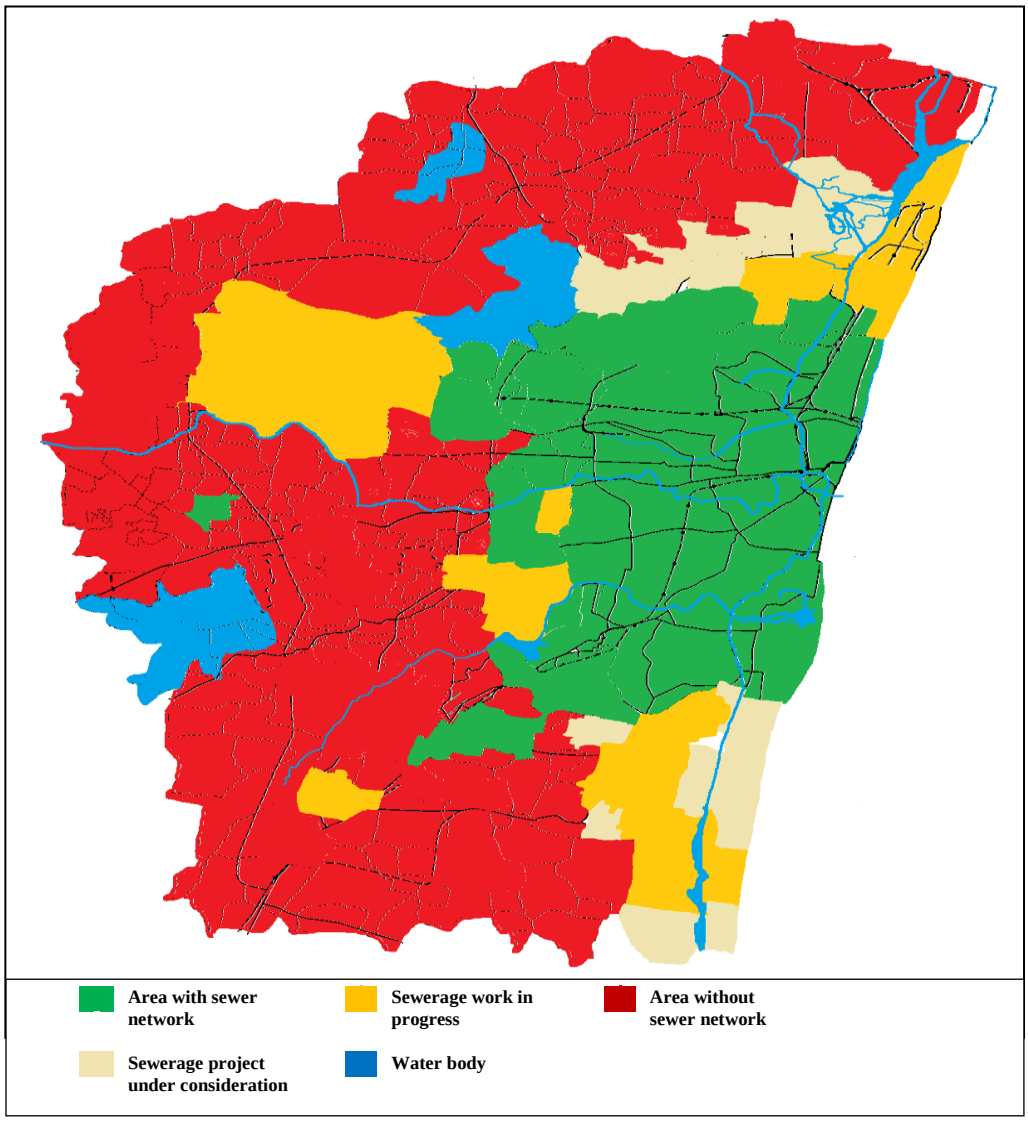
Non-formulation of sanitation strategy and City Sanitation Plan

The National policy recommends that each State and City need to formulate their own sanitation strategy and City Sanitation Plan (CSP) in overall conformity with the National Policy. CSP was to prioritise and plan area specific projects. Audit, however found that the sanitation strategy and CSP were not formulated for addressing the challenges of city sanitation. GoTN stated (April 2020) that the policy and strategy on sewage management were based on the Master Plan of CMWSSB. Audit observed that as the jurisdiction of CMWSSB was the area under GCC limits only, the master plan did not incorporate CMA level strategy. Non-availability of sanitation strategy and CSP for CMA adversely impacted the decisions on expansion of sewerage networks.

2.1.8.2 Inordinate delays in completion of UGSS projects

As of September 2019, (i) works on provision of UGSS was in progress in 14 newly added areas of GCC and in two other local bodies in CMA **(Appendix 2.3)** at an estimated cost of ₹ 1,252.05 crore, (ii) Detailed Project Reports (DPR) were approved or under preparation in respect of 12 more added areas of GCC and six local bodies in CMA and (iii) there was no proposal under consideration in respect of five added areas of GCC and 19 other local bodies in CMA. **Exhibit 2.2** illustrates the status of UGSS in CMA.

Exhibit 2.2: Coverage of sewer network in CMA



(Source: Based on data furnished by CMWSSB)

The status of ongoing UGSS projects are given in **Appendix 2.3** and an abstract of those projects which are delayed beyond the scheduled date of completion are given in **Table 2.4**.

Table 2.4: Delayed UGSS works in progress

Name of the Local body	Number of UGS schemes	Estimated cost	Expenditure	Delay in completion of UGSS	
		(₹ in crore)		3 to 5 years	5 to 10 years
Added areas of GCC	7*	513.79	371.39	2	5
Municipalities - Avadi and Tambaram	2	319.02	299.06	1	1
Total	**9**	**832.81**	**670.45**	**3**	**6**

* Two added areas *viz*., Sholinganallur and Karapakkam came under a single scheme

(Source: Monthly Progress Report of CMWSSB)

Audit scrutiny of UGSS projects show that these projects are plagued by abnormal delays, mainly due to

(a) deficiencies in contract management, wherein contractors for pipeline and STP works, were retained despite poor output as discussed in **Paragraphs 2.1.8.2 (ii), 2.1.8.2 (iii) and 2.1.8.2 (iv)**,

(b) lack of co-ordination with line departments, especially in digging of roads for laying of sewer pipelines, as discussed in **Paragraphs 2.1.8.2 (ii), 2.1.8.2 (v) and 2.1.8.2 (vi) (a)**,

(c) poor planning and faulty technical designs, as discussed in **Paragraphs 2.1.8.2 (i), 2.1.8.2 (ii), 2.1.8.2 (iii), 2.1.8.2 (iv)** and **2.1.8.2 (vi) (d)**, and

(d) ineffective handling of issues connected with encroachment of work sites as commented in **Paragraph 2.1.8.2 (iv)**.

Specific failures in implementation of the projects are discussed below:

(i) Porur UGSS

Porur is one of the 42 areas newly added to GCC in 2009. Details of Porur UGSS and its status as of May 2020 were as given in **Table 2.5**.

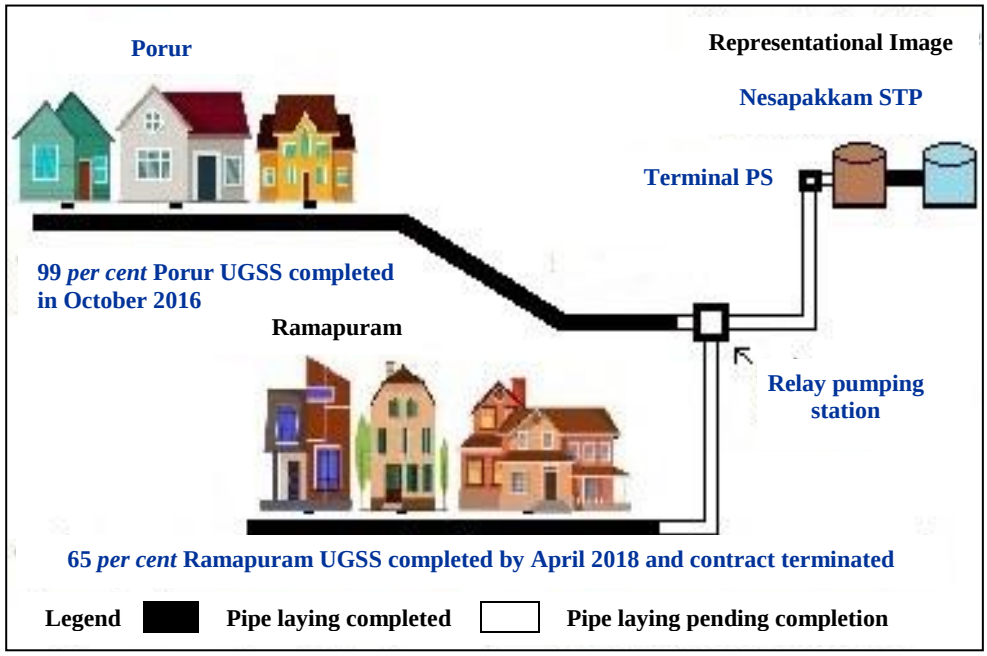
Table 2.5: Details and present status of Porur UGSS

Administrative sanction	July 2009/₹ 38.29 crore
Technical sanction	₹ 40.87 crore
Project components	Collection system, Pumping mains and Sewage Pumping Stations (SPS).
Population benefitting	28,924 (2011 census)
Contract value	₹ 34.42 crore
Work commencement	September 2010
Schedule date for commissioning	September 2012
Number of extensions of time (EOTs) granted and penalty imposed	11 EOTs , ₹ 5 lakh
Total expenditure incurred	₹ 37.77 crore (till pre-closure in October 2016)
Present status	Not commissioned. 99 *per cent* completed (All works except commissioning were completed in October 2016)

(Source: Data collected from CMWSSB)

While the work was in progress, in October 2012, CMWSSB prepared a DPR for providing UGSS in Ramapuram, an area abutting Porur. At that stage, CMWSSB altered the original design for the pumping mains of Porur UGSS and to connect it with the terminal pumping station and pumping main of Ramapuram UGSS, so as to carry the sewage collected from both these areas through a single pumping main to the STP at Nesapakkam **(Exhibit 2.3)**.

Exhibit 2.3: Illustrative diagram of Porur and Ramapuram-Manapakkam UGSS



(Source: Based on maps of CMWSSB)

After a delay of four years, consequent on 11 EOTs granted to the contractor due to delay on his part, all works under Porur UGSS were completed by October 2016. The project, however, could not be commissioned till date (May 2020) due to delay in completion of pumping main works and terminal pumping station forming part of Ramapuram UGSS, as discussed in **Paragraph 2.1.8.2 (vi) (d)**.

Audit observed that both Porur and Ramapuram were added to GCC in 2009. The policy being provision of UGSS in the entire GCC area, CMWSSB should have planned to provide common terminal pumping station and common mains of adequate capacity at the time of planning Porur UGSS itself.

Due to lack of comprehensive planning, an estimated 7.9 mld of sewage generated in Porur area was not collected and treated. GoTN replied (April 2020) that pending completion of Ramapuram UGSS, a plan to carry the sewage from Porur area through an alternative alignment at a cost of ₹ 1.47 crore was in tender stage. The reply pointed to an avoidable liability of ₹ 1.47 crore due to poor planning and slow progress of Porur UGSS work in addition to non-realisation of the benefits of the scheme for nearly eight years.

(ii) Thiruvottiyur UGSS

The erstwhile Thiruvottiyur Municipality was added to GCC in 2009. Details and status of the works as of May 2020 are given in **Table 2.6**.

Table 2.6: Details and present status of Thiruvottiyur UGSS

Administrative sanction	February 2004 - ₹ 28.55 crore (RAS - December 2009 - ₹ 87.63 crore)
Technical sanction	September 2006, January 2011 (Revised)
Project components and Number of packages	Collection system, Lift stations and SPS in Package I to IV, Pumping main from SPS to STP in Package V and STP in package VI.
Population benefitting	2,11,436 (2011 census)
Contract value	₹ 55.71 crore
Issue of work order	Between March 2007 and October 2010
Schedule date for commissioning	November 2008 - March 2013
Number of EOTs granted	42 (5 to 11 EOTs to different contactors)
Penalty levied on contractors	₹ 2.79 crore
Expenditure incurred	₹ 56.04 crore (as of September 2019)
Present status	Not commissioned. Packages I-V completed. Package VI (STP) is in progress.

(Source: Data collected from CMWSSB)

Deficiencies in implementing the project are discussed below:

- **Packages I & II** of the project suffered initial delay of five to twelve months in handing over the sites for SPS. Further, as per the original plan, the sewage from the areas covered under these packages was to be led into the existing sewer mains of neighbouring areas. Only when the project was under execution, it was found that the existing sewer mains were at a shallow depth which necessitated provision of a lift station and consequent delay in linking the sewer lines. While all sewer lines under these packages were completed by December 2016, the work on lift station which was omitted in the original plan, was still under progress (May 2020).
- **Package III** got delayed due to redesigning components of the work on account of road upgradation. All works under the package were completed by February 2016, with a delay of over seven years.
- **Package IV** got delayed initially by four years due to legal dispute over the site selected for lift station. All works under the package were completed by March 2018, with a delay of over nine years.

- **Package V,** involving pumping main from terminal SPS to the STP, was foreclosed in November 2008 due to change in the alignment warranted by the change in the location of STP, and inordinate delay in getting permission for carrying pipelines underneath railway lines. The work was retendered by CMWSSB (May 2010) and completed by May 2015, against the targeted completion in June 2012. The delay of three years was due to slow progress of work covered by five EOTs on account of site conditions which included an ongoing road widening work and delay in obtaining permission for railway line crossings.

- ***Thiruvottiyur STP Package*:** The site identified for the STP was changed twice; first due to issues in getting clearance under Coastal Zone Regulations, and second time due to public protest as the identified site was a burial ground. The third site identified and handed over (March 2011) to the contractor was a garbage dumping ground with about 10 feet of garbage pile up. The contractor, *inter alia*, cited the delay in handing over the site as the reason for delay and the same was accepted as one of the reasons for repeated EOTs. Audit, however, observed that the delay was unjustified as the contractor had not completed the work even after nine years of handing over of the site. CMWSSB had allowed 10 EOTs to cover the delay and levied penalties totaling to ₹ 1.10 crore. As of April 2017, 97 *per cent* of the work was completed, but the work did not progress thereafter. In July 2019, CMWSSB decided to study the possibility of upgrading the technology used in the STP from the Activated Sludge Processing (ASP) technology into Sequencing Batch Reactor (SBR) technology[6]. This proposal was under consideration to meet the new (April 2019) norms. No further progress was made (March 2020).

- As per CPHEEO Manual, the STP work should be scheduled before the pipe line works, so as to synchronise the different packages. CMWSSB, however, scheduled the packages for sewer lines before the scheduled completion of STP. As a result, the pipeline works in five packages were fully completed, but the project could not be commissioned as the STP was not ready.

Thus, due to failures in planning and scheduling, lack of effective coordination in land allocation and handing over site and granting unjustified EOTs, the project sanctioned administratively in 2009, could not be commissioned even as of March 2020. As a result, (i) even seven years after the scheduled date of completion, an estimated 16.14 mld of sewage generated in that area was not collected for treatment and (ii) 2,620 manholes of the Thiruvottiyur UGSS,

[6] Both the technologies primarily use aeration and aerobic microorganisms to digest organic matter in the sewage. SBR is a relatively newer technology with better treatment at lower cost by processing the sewage in batches in the same tanks.

constructed long back without synchronising with the construction of STP, got buried due to relaying of roads. CMWSSB had to incur ₹ 1.44 crore for tracing and raising these manholes.

GoTN accepted the facts and stated (April 2020) that the contractor met with financial crunch and consequently could not show any progress in work. The reply was untenable as CMWSSB had termed the performance of the contractor as poor in May 2013 itself, but the contractor was given repeated EOTs leading to the abnormal delays. Further GoTN did not explain the indecisiveness in respect of the technology to be used in the STP, which caused further delay.

(iii) Avadi UGSS

Avadi is a western suburb of GCC. Details and status of completion of the works of Avadi UGSS, as of May 2020, were as given in **Table 2.7**.

Table 2.7: Details and stage of Avadi UGSS

Administrative sanction	April 2008, ₹ 158.07 crore
Technical sanction	July 2008. June 2012 (revised)/₹ 193.88 crore
Project components and Number of packages	Collection system, HSC, Pumping mains and SPS in Package I to VI, two STPs (36 mld + 4 mld) in package VII and an effluent pumping station and pumping mains in package VIII.
Population benefitting	3,80,000
Contract value	₹ 173.53 crore
Issue of work order	Between December 2008 and November 2011
Schedule date for commissioning	Between February 2011 and April 2014
Number of EOTs granted	41 (3 to 10 EOTs to different contractors)
Penalty levied on contractors	₹ 40 lakh
Expenditure incurred	₹ 173.62 crore (as of September 2019)
Present status	Collection system is completed. Not yet commissioned due to non-completion of STP.

(Source: Data collected from CMWSSB)

All packages except the STP were completed between August 2013 and July 2017, after a delay of two to three years and 32 EOTs. The work on the 36 mld Paruthipattu STP scheduled to be completed in April 2014 was still under progress (May 2020).

- Award of contract for the 36 mld STP (Package VII) got delayed primarily due to change in the mode of disposal of treated sewage. The project was approved under Jawaharlal Nehru National Urban Renewal Mission (JNNURM), with a condition to discharge the treated sewage into an adjoining lake. CMWSSB, on the insistence (July 2010) of TNPCB, revised the design to let out the treated sewage into the Cooum river. The change in design, contrary to JNNURM conditions and CPHEEO guidelines, involved an

additional expenditure of ₹ 5.74 crore. The contract awarded in November 2011 was scheduled to be completed in April 2014. However, due to slow progress, CMWSSB granted nine EOTs to the contractor and in July 2019 issued a show cause notice. After arbitration (August 2019) the contractor was granted further extension. The work was incomplete as of March 2020. In the meantime, the STP with a capacity of four mld was completed and commissioned in March 2019.

- Even as a decision on discharge of treated effluent was being debated, in violation of CPHEEO manual provision of scheduling UG pipeline works after scheduling STP, CMWSSB proceeded with tendering and award of contracts for pipeline works in all the seven packages in December 2008 and completed between June 2014 and July 2017. As a result of non-synchronising of UG pipeline works with the STP works, pipeline works were completed and the entire infrastructure was lying idle for over three years.

Thus, as a result of the delay caused by deficient planning and contract management, (i) an estimated 20.65 mld of sewage generated in Avadi area remained uncollected and (ii) as the designed capacity of the STP would cater to the projected population as of 2023[7], the STP would require capacity expansion within a very short period of its commissioning, as 12 years out of design life of 15 years had already lapsed. Similarly, 12 years out of the design life of 30 years of the sewer lines had also lapsed, and pipelines in 120 reaches and 2,869 manholes got damaged over the years by other civic agencies working in that stretches. CMWSSB's contractor estimated (April 2018) that it would cost ₹ 7.50 crore to rectify the damages.

GoTN replied (April 2020) that the sewage collection systems were handed over to the Local Body and partial operations were started. GoTN also stated that once house service connections were effected, the projects would be fully commissioned. The reply was untenable as only the four mld STP was commissioned in March 2019 after a delay of five years and the main 36 mld STP was still under construction, leading to only partial utilisation of the infrastructure created.

(iv) Tambaram UGSS

Details and status of completion of the works of Tambaram UGSS, as of May 2020, were as given in **Table 2.8**.

[7] STP was designed in 2008 with a 15 year design life, i.e., to meet the projected population as of 2023.

Table 2.8: Details and stage of Tambaram UGSS

Administrative sanction	May 2009 at a cost of ₹ 160.97 crore
Technical sanction	February 2009 - February 2011/₹ 174.27 crore
Project components and Number of packages	Collection system, HSC and SPS in Package I and II, a 30 mld STP in package III and pumping main from terminal SPS to STP in Package IV.
Population benefitting	1,72,260 (2001)
Estimated cost / Contract value	₹ 216.06 crore
Issue of work order	Between December 2009 and May 2012
Schedule date for commissioning	Between December 2011 and July 2015
Number of EOTs granted	20 (2 to 11 EOTs to different contractors)
Penalty levied on contractors	₹ 1.66 crore
Expenditure incurred	₹ 125.44 crore (as of September 2019)
Present status	Not commissioned. Package IV completed; Packages I - III in progress.

(Source: Data collected from CMWSSB)

Audit scrutiny disclosed the following deficiencies:

- The site for STP was not free of encroachments, but was handed over to the contractor in August 2012. CMWSSB took one year to clear the encroachments. The actual handing over of work site was considered as August 2013. Further, despite giving five EOTs to the contractor, and levying a penalty of ₹ 23.86 lakh for delays attributable to the contractor, the STP remained incomplete (May 2020).

- The agreement for Package I, involving collection system and related works in East Tambaram area, was terminated in June 2014 due to slow progress and the Tambaram Municipality took over the work and awarded to contractors after splitting the work into three sub-packages. As of August 2019, only 51 to 80 *per cent* of the awarded works were completed. Audit noticed that the contract under this package had to be terminated *inter alia* due to non-inclusion of estimates for rock cutting and controlled blasting. On pointing out the failure in considering the rock formations on UG pipeline stretches at the time of DPR, the Executive Director, CMWSSB, stated that these factors would be included in future DPRs.

- Package II of the project involves collection system and related works in West Tambaram area. The work was to be completed on May 2012. Only 81 *per cent* of the work was completed as on March 2020. CMWSSB granted 11 EOTs on grounds such as elections, monsoon, scarcity of building materials, etc. CMWSSB imposed penalties totalling to ₹ 1.27 crore. Audit observed that the EOTs were unjustified as monsoon was a usual phenomenon,

election related code of conduct would not affect ongoing works and GoTN being the regulator of sand quarrying, scarcity could have been avoided by proper coordination. While the STP (Package III) was still under construction, by June 2019, the Municipality operationalised house service connections (HSC) to 1,100 houses[8]. The collected raw sewage stagnated in the basin of the STP (**Exhibit 2.4**), before being let out in to Adyar river without due treatment. GoTN replied (April 2020) that it was not possible to run the STP due to low quantity of sewage being collected and hence the collected sewage was being let out after minimum treatment through chlorination. Thus, the delay in execution of the project due to faulty soil survey and issues in contract management and the imprudent decision to operationalise HSCs even before completion of STP, had resulted in disposal of untreated sewage into Adyar river.

Exhibit 2.4: Stagnant raw sewage in the basin of Tambaram STP

(Source: Audit team)

(v) Ambattur UGSS

The erstwhile Ambattur Municipality was merged into GCC in 2009. As of 2008, areas falling under 35 out of 52 wards of the Municipality had UGSS and CMWSSB proposed (May 2008) to implement UGSS in the remaining 17 wards as Phase III. Details and stage of completion of the works of Ambattur UGSS, as of May 2020, were as given in **Table 2.9**.

[8] Out of 2,163 houses in 2 (zone 9 and 10) out of the 17 sewage zones.

Table 2.9: Details and stage of Ambattur UGSS (Package II of Phase III)

Administrative sanction	May 2008
Technical sanction	August 2009
Project components	Sewer lines, pumping stations and HSCs in all seven packages
Population benefitting	2,57,319 (Base year 2009)
Estimated cost / Contract value	₹ 74.32 crore
Issue of work order	April 2009 - May 2010
Schedule for commissioning	July 2012
Number of EOTs granted	Five
Penalty levied on contractor	₹ 13.32 lakh
Expenditure incurred	₹ 65.05 crore (as of September 2019)
Present status	Partially completed.

(Source: CMWSSB)

CMWSSB called for tender to implement the scheme in seven packages. Three packages were awarded and completed between February 2014 and March 2015 and put to use. The remaining four packages were clubbed together as a single package and awarded in May 2010. But the contract was terminated in June 2016 due to poor progress and a penalty of ₹ 10 lakh was imposed on the contractor. Fresh tenders were awarded between January 2018 and January 2019, by splitting the work into six smaller packages. GoTN stated that as of March 2020, works in three of the six smaller packages were completed and were progressing in the rest. CMWSSB attributed delays to road cut permission, handing over of site by local body and public protest.

Audit observed that despite poor progress, the termination of agreement was done six years after award of contract. This indicated failure in proper monitoring and review of progress in the four packages. Thus, failure of CMWSSB in contract management and in ensuring effective coordination with the line departments contributed to the delay and non-achievement of objectives of the scheme for over seven years.

(vi) UGSS in other areas of CMA

Audit scrutiny of implementation of smaller UGSS projects in other areas of CMA disclosed unexplained delays and consequently the investments made in these projects continued to remain unfruitful for long durations and the sewage from these areas were not collected by CMWSSB. The features and stages of these projects are given in **Appendix 2.4** and the reasons for the delays are discussed hereunder.

(a) Karapakkam and Sholinganallur: Against the scheduled commissioning in March 2016, 90 *per cent* of works were physically completed as of July 2017 and thereafter the works progressed very slowly due to issues in obtaining road cut permission. GoTN stated (April 2020) that trial for commissioning was under progress and the project would be

commissioned soon. But, the fact was that as of May 2020, the project was delayed by more than four years, mainly due to deficiencies in coordination with other agencies connected with the work site.

(b) Pallikaranai: Against the scheduled commissioning in February 2013, 96 *per cent* of supply and erection of electrical, mechanical and instrumentation works along with construction of pumping station were physically completed as of July 2017. There was no progress thereafter. Due to slow progress of work, show cause notice was issued (October 2018) for termination of the contract and the contractor filed (November 2018) a case in the Hon'ble Madras High Court and the arbitrator appointed (January 2019) by the Court allowed (November 2019) the termination. CMWSSB called for fresh tenders (January 2020). Thus, primarily due to issues in contract management, the Pallikaranai UGSS project was delayed by over seven years. GoTN stated (April 2020) that the process for retendering was going on.

(c) Perungudi: The project was scheduled for commissioning in November 2012, however no progress was achieved as on May 2020. GoTN attributed reasons such as sandy soil, delay in handing over site and issues with shifting of electricity cables and water pipelines, etc,. for the slow progress of work. Audit observed that lapses in planning and project management were the primary reasons for the delay.

(d) Ramapuram: As of July 2017, 88.48 and 66 *per cent* of construction of manholes and pumping stations were completed. Thereafter, the contractor did not show any progress in the work. Therefore, the contract was terminated (November 2018) and CMWSSB imposed a penalty of ₹ 66 lakh. GoTN (April 2020) stated that action was being taken for calling fresh tenders.

(e) Nerkundram UGSS: In 2009, GoTN brought Nerkundram under GCC. In March 2016, a DPR for the Nerkundram UGSS was prepared at a cost of ₹ 106.55 crore and technical sanction was accorded (July 2016) by the Engineering Director. In the meantime, CMWSSB proposed (June 2016) to Government to accord revised administrative sanction under Chennai Rivers Restoration Trust (CRRT). In anticipation of revised administrative sanction from Government, CMWSSB invited (July 2016) tender and the single responsive tender was rejected. In the meantime, Government accorded (January 2017) revised administrative sanction and the estimate for the work was revised (September 2017) for ₹ 100.35 crore. Re-tender was invited during September 2017 and work order was awarded in January 2019 after a delay of one year and four months for a contract value of ₹ 56.51 crore with contract period of 30 months. Work was commenced in June 2019 and was under progress (August 2019). Thus, due to abnormal delay in finalisation of tender, the project could not be completed, thereby impacting sewage collection.

(vii) Abandoned projects

In September 2008, CMWSSB prepared a DPR for providing UGSS to eight town panchayats[9] (TP) in CMA at a total cost of ₹ 312.04 crore. GoI approved (January 2009) the project under JNNURM with GoI, GoTN and local body share at the ratio of 35:15:50. GoI and GoTN released (March 2009) ₹ 27.15 crore and ₹ 11.63 crore as their share and share of local bodies was proposed to be met by obtaining loan from Tamil Nadu Urban Finance and Infrastructure Development Corporation Limited. Of the eight TPs, works were taken up only in Pallikaranai and Perungudi, which were added (October 2011) to GCC and in Tirumazhisai TP. Audit noticed that mainly due to inability in mobilising funds for local body share, the projects proposed for the remaining five town panchayats were dropped and the grant of ₹ 38.78 crore already received from GoI and GoTN were refunded.

Thus, despite availability of 35 *per cent* of project cost as grant from GoI, GoTN did not attach due importance, leading to scrapping of sanctioned projects. Audit found that there was no plan to revive these projects.

(viii) Impact of delays in project implementation

The delays in completion of sewerage projects discussed in **Paragraphs 2.1.8.2 (i)** to **2.1.8.2 (vi)** resulted in continued unsafe disposal of sewage. Further, Audit observed that:

- The undue delays in completion of UGSS projects had resulted in cost escalation of ₹ 82.91 crore in respect of three projects **(Appendix 2.5)** which are under implementation beyond their target date for completion. The remaining projects were also likely to overshoot the estimated cost when they are finally completed.
- Six[10] of the nine UGSS projects delayed beyond the target date were implemented with JNNURM funds. Against the total sanction of ₹ 198.45 crore under JNNURM for these six projects, only ₹ 179.96 crore was received from GoI as of March 2019. As JNNURM has since been wound up and these long pending projects were not approved for continued funding under AMRUT scheme, which succeeded JNNURM, GoI grant of ₹ 18.49 crore would not be received and hence would be an additional burden on GoTN's budgetary resources.
- As per the CPHEEO manual, sewerage projects are designed for serving the projected population over the next 30 years. The STP component is designed with the projected population at the end of 15 years from the base year. Audit observed that the abnormal

[9] Chitlapakkam, Madambakkam, Pallikaranai, Peerkankaranai, Perungalathur, Perungudi, Sembakkam and Thirumazhisai.

[10] Ambattur, Avadi, Pallikaranai, Perungudi, Porur and Tambaram.

delays in Avadi, Tambaram and Thiruvottiyur STP projects would lead to saturation of capacity in less than four/five years of commissioning of these infrastructure and consequent possible deterioration in the quality of treatment and need for further investments. Further, these delays adversely impacted the economic life span of the infrastructure created at huge cost.

- Commissioning of completed packages were delayed due to non-completion of other related packages. This would help contractors of the completed packages to evade responsibilities for construction defects which would ultimately come to notice only at the time of trial run/commissioning of the project. The defect liability periods and warranty period for electro mechanical items would lapse as happened in the case of Package VI of Avadi UGSS.
- An estimated 74.69 mld of sewage generated (**Appendix 2.6)** in the project area was not collected for treatment due to the delay in completion of the projects. Further, as the septage generated in these areas were not handled properly, as commented in **Paragraph 2.1.9.3,** the delayed completion of projects contributed to water pollution in CMA.

In response to the delays pointed in **Paragraphs 2.1.8.2 (i) to 2.1.8.2 (vi)** above, in the Exit Conference, the Executive Director stated that the sub soil conditions of CMA region varied widely and monsoon season impacted the timely completion of schemes. The Additional Chief Secretary, MAWS Department observed that the involvement of multiple agencies for clearances also contributed to the delay. Further, the Executive Director stated that the time period adopted at present for completion of UGSS was 36 months, irrespective of the conditions involved, and agreed that scheme specific factors would be taken into consideration in future projects. In view of the facts discussed in **Paragraphs 2.1.8.2 (i) to 2.1.8.2 (vi)** and the views expressed in the Exit conference, Audit observed that effective planning, coordination with line departments and contract management would have helped to avoid the delay.

2.1.9 Sewage collection

As discussed in **Paragraph 2.1.6**, the sewerage network failed to collect 556 mld of sewage from CMA. Audit found that sewage from areas already having sewer network as well as areas without sewer network were directly flowing into the waterways of Chennai. Issues and deficiencies in sewage collection are discussed hereunder.

2.1.9.1 Non-installation of flow meters in Sewage Pumping Stations

CPHEEO Manual envisages installation of flow meters for measuring sewage received by pumping stations. Measuring sewage at SPSs would facilitate identification of seepages in pipes carrying sewage to the SPS by enabling comparison of daily collection. It will also facilitate identification of seepage

in the pipeline from SPS to STP by comparing the pumped quantity with the quantity received by STPs. Audit found that flow meters were not installed in any of the SPSs of CMWSSB. It was replied that the sewage discharge quantity was calculated based on pump running hour and efficiency of the pump sets.

Audit found that in Pallavaram SPS of Pallavaram Municipality, the flow meter was working properly for collecting charges from Pallavaram Municipality. Therefore, Audit observed that providing meters for better measurement of operational efficiency in sewage collection and pumping was not a complex task and there was no reason why the flow meters could not be made operational in SPSs of CMWSSB.

Audit also observed that in the absence of flow meters, SPSs and STPs of CMWSSB were not in position to ascertain whether volume of sewage stated to be pumped by the preceding SPS was actually received in the wells of receiving SPS or STP. Measuring the performance of SPSs using pump running hours would not give accurate data as the quantity actually pumped would vary from the designed capacity of the pumps due to ageing, power fluctuations etc. This would help to hide operational deficiencies as the system lack transparency, which would ultimately affect the efficiency in sewage collection. Availability of accurate data on sewage collection assumes importance in the context of partial UGSS coverage in the city and large amount of sewage entering water bodies through SWD as discussed in **Paragraph 2.1.10**.

In response to Audit, GoTN stated (April 2020) that provision of flow meter in SPS has not been made mandatory in the CPHEEO Manual; but, as pointed out by Audit, the flow meters would be installed in all SPSs of CMWSSB in due course.

2.1.9.2 Sewage not received at STP due to pipeline burst

Keelkattalai pumping station of Pallavaram Municipality pumps an average of 12.05 mld of sewage to Perungudi STP of CMWSSB. CMWSSB treats and disposes the treated sewage and for that collects sewage treatment and disposal charges at ₹ 4.65 per KL from Pallavaram Municipality. Audit found that for 199 days during November 2017 to June 2018, an estimated 2,398 million litres of sewage was not received from Pallavaram Municipality due to pipeline burst. Evidently, during this period, the uncollected sewage was discharged into water bodies without treatment.

2.1.9.3 Non-adherence of guidelines of septage management by CMWSSB and local bodies in CMA

Thirty one out of forty two added areas of GCC, seven out of eight municipalities, 10 out of 11 Town Panchayats and all 10 Panchayat Unions of CMA were not provided with UGSS. In unsewered areas, sewage are collected in septic tanks for onward transmission to STPs. Sewage that is stored in a septic tank is commonly called as septage. In September 2014, GoTN

reviewed the situation and felt that even as the available STPs were underutilised[11], septage from unsewered areas were let out into water bodies without treatment. In view of that**,** GoTN issued (September 2014) comprehensive guidelines which contemplated the initiatives for management of septage in unsewered areas. The major elements of septage management which requires the involvement of local bodies/statutory bodies (CMWSSB) are septage transportation, treatment, septage disposal, record-keeping and reporting (Management Information System) as discussed below:

- Local body clusters have been identified for treatment of collected septage at earmarked STP locations. All septage transportation vehicles should be directed to transport septage to their designated STP.
- Only certified and licensed septage transporters to de-sludge and transport waste to the designated STP. The transporters should be selected in accordance with The Tamil Nadu Transparency in Tenders Act, 1998, as per the terms and conditions.
- Information related to septage generation from residents and commercial establishments needs to be collected by the local bodies, household level details of insanitary latrines, identification of septic tank location, operator in-charge for each location, vehicle details, name and location of STP earmarked for disposal of septage, and decant facility details should be duly collected by all local bodies.

Audit observations in management of septage by CMWSSB and local bodies are discussed below:

(a) GCC areas including added areas of GCC

CMWSSB did not maintain any data on houses within its jurisdiction without sewer connections. The 2014 orders of GoTN on septage management was not implemented by CMWSSB even as of October 2019.

(b) Other local body areas in CMA

A total of eight[12] local bodies were test-checked. None of them had a functioning UGSS. The status of implementation of GoTN's instructions on septage management in the sampled local bodies was as given below:

- Septic tank enumeration was not carried out in four[13] LBs, which made it difficult to monitor septage disposal.

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11 Average actual sewage treatment was 530 mld against the combined installed capacity of 727 mld of the 12 STPs in operation.

12 Avadi, Chitlapakkam, Poonamallee, St. Thomas Mount, Tambaram, Thirumazhisai, Thiruneermalai and Villivakkam.

13 Chitlapakkam and Thiruneermalai TPs; Poonamallee and St. Thomas Mount PUs.

- The list of locations where sewage is getting mixed with storm water drain were not enumerated and maintained by any of the eight LBs.
- Licenses were not granted for transporting septage in five[14] LBs. Although licenses were issued in the remaining three LBs, records relating to details of STPs where the trucks decanted the septage, were not made available to Audit. In the absence of monitoring of septage trucks, safe disposal of the collected septage could not be ensured and would entail the risk of letting out septage into the water bodies. None of the LBs had details of their designated STP and its decanting facilities.
- Training sessions for LB staff, training/orientation sessions for septage transporters/private vendors have not been conducted in any LBs.

Thus, due to non-enforcement of the orders of GoTN, proper collection and treatment of septage from unsewered areas was not ensured. The failure of CMWSSB and local bodies to implement the guidelines pointed to lack of willingness on their part and improper disposal of septic tank effluents and septage pose direct and indirect socio-economic impacts.

2.1.9.4 Inadequate decanting facilities

Construction of decanting facility for receiving septage from areas not covered by sewerage system is a mandatory part of sewage management. Major decanting facilities for receiving septage through lorries are available only in Nesapakkam and Perungudi STPs. The STPs at Kodungaiyur and Koyambedu, which are closer to nine unsewered added areas of GCC with a sewage generation of 54.42 mld, did not have decanting facilities. Audit found that only 3.6 mld out of an estimated 375 mld generated in areas without sewer lines was received by the decanting facilities of CMWSSB. Audit observed that non-availability of sufficient decanting facilities at STPs was one reason for non-collection and non-treatment of septage from areas without sewer networks.

GoTN stated that in addition to the two STPs with decanting facilities, three SPSs[15] also had facility to receive septage through tankers. Audit found that the total sewage handled by these three SPSs was only 85 mld and hence in view of the total estimated uncollected sewage of 629 mld, the existing facilities to receive septage through lorries were grossly inadequate, which would result in the lorries letting out septage into the water bodies.

2.1.9.5 Non-maintenance of database on licensed septage transporters

Audit observed that data on volume of septage received in STP through lorries were alone maintained. The data on details of certified and licensed septage

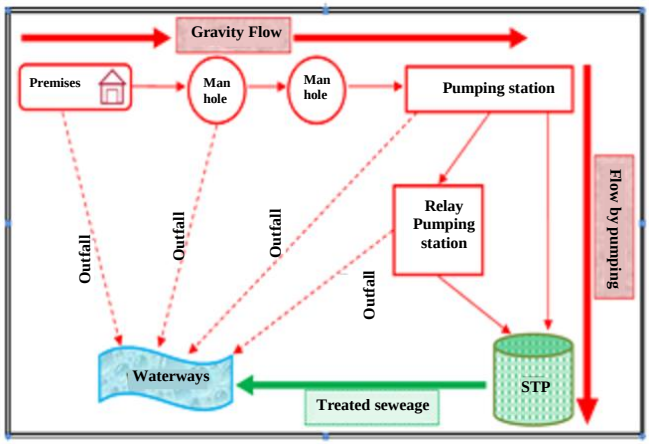
14 Poonamallee, St. Thomas Mount, Thirumazhisai, Thiruneermalai and Villivakkam.
15 Erukkencheri, Ganga Nagar and Mogappair.

transporters to de-sludge and transport waste to the designated STP were not maintained by STPs and local bodies. CMWSSB replied that septage vehicles were being operated by private transporters and they decant sewage at STPs by paying charges fixed by CMWSSB. Audit observed that in the absence of information on the local bodies from which septage was transported to the STP, CMWSSB was not in a position to quantify separately the volume of sewage received from each local bodies. GoTN stated (April 2020) that private sewer lorries were not registered with government agencies, but CMWSSB was maintaining data on septage transported by its lorries. The reply was untenable as CMWSSB was providing septage transportation service only in GCC area and the private operators in the rest of CMA were not monitored.

2.1.10 Sewage outfalls into storm water drains

Sewage outfalls into waterways occur either due to inadequate handling capacity of the sewerage system or unauthorised sewer connection to storm water drains (SWD) (**Exhibit 2.5**). SWDs are meant for carrying rain water to drain the city. Section 56 of CMWSS Act, 1978, prohibits letting of sewage into SWDs. CMWSSB estimated (April 2019) that 242.73 mld of raw sewage entered SWDs and drained into water bodies such as Adyar river, Buckingham Canal, Cooum river, etc. This has resulted in high pollution load of the water bodies in the city. This issue was due to illegal letting of sewage into SWD by occupants of premises and overflowing and puncturing of sewer lines adjoining SWDs. Efforts started by CMWSSB in 2012 to plug the sewage outfalls had not borne fruit even as of 2019, as discussed below.

Exhibit 2.5: Anatomy of sewage outfall



(Source: CMWSSB)

The eco-restoration of these rivers and water bodies include plugging of polluted sewage outfalls which are being executed under the aegis of the CRRT[16] which is formed for rehabilitation of Chennai water ways and water bodies. An action plan was formulated to prevent flow of untreated sewage into waterways and to improve the sewerage system under Infrastructure and Amenities Fund of Housing and Urban Development Department. Implementation of Plugging of polluted sewage outfalls are discussed in succeeding paragraphs.

[16] Chennai Rivers Restoration Trust (CRRT) is a wholly owned body under GoTN.

2.1.10.1 Plugging of outfalls using Infrastructure and Amenities Fund

In 2012, CMWSSB claimed to have surveyed the basins of the three waterways of the city, *viz.,* Adyar river, Buckingham canal and Cooum river and identified 337 sewage outfalls, flowing into these water bodies. Based on the proposal of CMWSSB, GoTN approved (July 2012 and December 2014) a project at a cost of ₹ 313 crore to plug these outfalls in two phases, using the Infrastructure and Amenities Fund of the Town and Country Planning Department. As per original plan, all the 337 sewage outfalls were to be plugged by March 2016, but work on 46 outfalls were incomplete even as of March 2020.

- Under Phase I of the project to plug 179 outfalls, the works were awarded[17] to a Contractor in November 2013. 170 out of 179 sewage works were completed after a delay of over two years and the contract for the balance nine works were terminated (November 2018) by CMWSSB due to slow progress of works by the Contractor. The works were abandoned.
- Under Phase II, works on 158 outfalls were split into seven packages and separate contracts were awarded for each package. Only three of the seven packages were completed **(Appendix 2.7)** between March 2018 and January 2019 and remaining four packages, with scheduled completion between September 2019 and January 2020, were incomplete (March 2020).

Audit found that the delays were mainly due to unjustified delays in finalisation of tenders by CMWSSB as discussed below:

(a) In respect of Buckingham Canal River Basin Package-II, overall time taken to issue work order after opening of technical bid was 31 months. Of which, the Board took 25 months to accord approval.

(b) The overall time taken to issue work order after opening of technical bid for Cooum River Basin Package-IB, was 20 months. Of which, the Board took 11 months for according approval.

(c) In respect of Buckingham Canal River Basin Package-IB, after opening of technical bid, the Board took more than 11 months to open price bid with overall time taken of 16 months to issue work order.

Recorded reasons for the delay in finalisation of tender were neither available nor produced to Audit when called for.

Thus, Audit observed that the objective of plugging of polluted sewage outfalls into water bodies remained unachieved in full, even four years after the scheduled date.

[17] For a contract value of ₹ 136.08 crore, with target date of completion as 19 January 2016.

Exhibits 2.6 and 2.7: Photos of untreated sewage being let out into water bodies

L.G. Road 300mts downstream of Harris Road Bridge

(Source: DPR of CRRP)

2.1.10.2 Plugging of outfalls under Cooum River Eco Restoration Project

The Cooum River traverses a distance of 20 kilometres within Chennai city limits before draining into the Bay of Bengal. GoTN has acknowledged that the river is highly polluted and is an urban sewer due to drainage of municipal and industrial waste.

Exhibit 2.8: Photos of untreated sewage being let out into water bodies

(Source: DPR of CRRP)

In January 2015 GoTN accorded administrative sanction for Cooum River Eco Restoration Project[18] (CRRP) at a cost of ₹ 604.77 crore, including 15 sewage management projects at a cost of ₹ 186.19 crore. The 15 sewage management projects sanctioned for implementation by CMWSSB included 10 new sewer mains to intercept and divert the sewage outfalls along 11.53 km of Cooum river, four sewage treatment plants and UGSS for Nerkundram, a newly added area lying close to the river. The status of the works sanctioned under CRRP was as follows:

- ***Interceptor and Diversion works:*** Interceptor and Diversion (I and D) works, to convey the outfalls to the current sewers and STPs, were entrusted (January 2015) to CMWSSB in 10 packages. Out of the ten works, one work awarded in February 2016 had not

[18] The project includes sewage and sanitation projects, improving the flood carrying capacity of the river, maintaining minimum ecological flow, developing river front, resettlement of slum dwellers along the river margins, etc.

commenced even as of May 2020 due to encroachments, four works were started[19] after a delay of about two years, four other works[20] were started after a delay of 6 to 11 months and one work was yet to be awarded.

- ***Modular Sewage Treatment Plants:*** The I and D systems discussed above will convey the flow directly to three modular STPs proposed to be established on the river bank. CMWSSB issued work order for all the three modular STPs in November 2016. However, as the sites for two of the three modular STPs at Chetpet and Choolaimedu were falling within the alignment of Maduravoyal Elevated Expressway, NOC was delayed. NOCs, applied in December 2016, were received only in February 2019 and April 2019, after redesigning the STPs according to the extent of land allotted by PWD. For the proposed modular STP at Maduravoyal, as the site allotted by PWD was a burial ground, the CMWSSB requested (May 2019) for allotment of alternate site and the same is pending with PWD.

Audit observed that constraints in putting up STPs due to site availability indicated deficiencies in DPR, which should have assessed the feasibility of the STP site. In the light of the faulty location of all the three STPs, the project has not delivered the intended objectives of diverting the sewage outfalls and the treatment of sewage.

Thus, as a result of unjustified delays in award of tender, lack of effective coordination with line departments to ensure availability of work site and inadequate planning, the projects to plug sewage outfalls into rivers had not succeeded, even four to seven years after sanction.

2.1.11 Functioning of Sewage Treatment Plants

STPs treat the collected sewage for safe disposal. Against the estimated sewage generation of 880 mld in GCC areas under the jurisdiction of CMWSSB, the treatment capacity of the 12 STPs was only 727 mld (82.6 *per cent*). In August 2018, GoTN, based on the recommendations made by a Consultant engaged by CMWSSB for rejuvenation and rehabilitation of STPs, issued orders for phasing out 5 of 12 STPs, as they had crossed their respective design life period. Average capacity of STPs available for utilisation and allocation of sewage are detailed in **Appendix 2.8**.

Audit scrutiny of functioning of STPs disclosed the following:

[19] Between February 2018 and February 2019.
[20] Between October 2016 and December 2018.

2.1.11.1 Non-functioning of primary clarifier units

Treatment of raw sewage primarily involved multiple stages *viz.*, primary settling, aeration, secondary settling, etc. Since primary settling is the first stage of treatment, any shortfall thereof would have a consequent detrimental effect on the treatment quality of the subsequent stages.

In 3 of the 12 STPs with two units of primary clarifiers, only one unit was functioning. The installed capacity of the STPs was based on the total capacities of the two units of primary clarifiers. As one of the two units of primary clarifiers were not functional in three STPs, these three STPs continued to handle sewage volumes higher than the capacity of the functional unit.

Hydraulic Retention Time (HRT) of primary clarifier is a critical parameter of STPs for efficient treatment of sewage. As per CPHEEO Manual, HRT depends on the volume of sewage received and the capacity of the primary clarifier. Ideally, the sewage entering the primary clarifier should be retained there for 2 to 2.5 hours for efficient functioning of STP, and shorter retention would result in poor treatment of sewage. Another important parameter is the overflow rate of primary clarifier, which should be in the range of 25 to 35 cu.m/sq.m/day. Audit found that the overflow rate[21] of each functional units of the three STPs were higher than the recommended maximum as worked out in **Table 2.10**, leading to lesser than the minimum HRT.

Table 2.10: Shorter than required HRT in primary clarifiers of three STPs

Name of Plant	Rated treatment capacity of primary clarifier of the STP (mld)	Average quantity actually treated (mld)	Actual overflow rate (m^3 per day per m^2 of surface area) (Recommended maximum is 25 to 35 m^3 / m^2/Day)	Actual retention time (Hours) (Recommended minimum time is 2-2.5 hours)
Kodungaiyur - Z-I (80 mld)	40.00	59.00	46.97	1.53
Kodungaiyur - Z-II (80 mld)	40.00	58.00	46.18	1.56
Nesapakkam (23 mld)	11.50	17.50	48.68	1.18

(Source: Records of CMWSSB)

Audit observed that the above STPs were not meeting the recommended ranges of HRT and overflow rate due to overloading. GoTN stated (April 2020) that the recommended overflow rate was 35 to 50 m^3 per m^2 of surface area per day, and the same was adhered to. The reply was untenable as the standard stipulated by CPHEEO for primary clarifier with sludge return design was 25 to 35 m^3/ m^2/day.

Thus, by operating only one of the required two primary clarifiers in three STPs, CMWSSB compromised on the quality of treatment.

[21] Ratio of overflow of primary clarified sewage in cubic metre to surface area of the clarifier in square metre.

2.1.11.2 Plant control tests not conducted

All 12 STPs of CMWSSB were designed to treat municipal sewage alone. CPHEEO Manual recommended 56 parameters to be tested to measure the physical, chemical and biological characteristics of treated sewage water irrespective of the treatment process. These tests were conducted to meet the statutory need as well as plant control needs. Audit noticed that tests were conducted and documented at STPs for only 11[22] out of the 56 parameters recommended by CPHEEO Manual. Five out of the eleven tests conducted by CMWSSB were mandatory tests as stipulated by the TNPCB and the remaining six tests were conducted for plant control. Eleven tests presently conducted at the STPs related to organic and biological parameters, except for oil and grease.

GoTN stated (April 2020) that the mandatory tests were conducted. Audit, however observed that the mandatory tests being conducted were not capable of detecting industrial wastes. As the STPs were not designed to handle industrial waste, it was necessary to analyse the presence of industrial wastes in the inflow to ensure proper treatment. Audit found that a study conducted (June 2018) by a Consultant engaged by CMWSSB found that by 2020 an estimated 62 mld of industrial effluent would flow into the STPs from pumping stations. Further, the Tamil Nadu Agricultural University, which conducted a study on converting the sludge into manure, also found traces of heavy metals in the sludge. Therefore, Audit observed that conducting all mandatory and plant control tests is critical for ensuring optimum performance of the STPs and the quality of the treated water.

2.1.11.3 Absence of independent audit of wastewater quality

Municipal sewage contains various wastes. If improperly collected and improperly treated, this sewage and its related solids could hurt human health and the environment. A treatment plant's primary objectives are to clean the sewage and meet the plant's discharge standards.

With a view to ensure the quality of treated water let out by STPs, the Handbook of Benchmarks of the Ministry of Urban Development of GoI envisages availability of own laboratory or easy and regular access to accredited testing centers for carrying out tests in addition to periodic independent audit of wastewater quality. Audit scrutiny disclosed that:

- CMWSSB has established testing laboratories in all the STPs. But, these laboratories were either operated by the operation and maintenance (O&M) contractor of the respective STP or by using staff outsourced from the contractor. Audit observed that this arrangement paved way for conflict of interest as the contractors were responsible for ensuring proper treatment of sewage.

[22] Bio-Chemical Oxygen Demand, Chemical Oxygen Demand, Dissolved Oxygen, Fecal Coliform, MLSS, MLVSS, Oil and Grease, pH, Suspended Solids, Temperature and Total Dissolved Solids.

- Further, CMWSSB had not put in place the envisaged system of periodical independent audit of the quality of treated water.

GoTN stated (April 2020) that a proposal was under way to establish a full-fledged laboratory for conducting all tests.

2.1.12 Reuse of treated sewage water

Water recycling is the reuse of treated wastewater for beneficial purposes such as agricultural and landscape irrigation, industrial processes, toilet flushing, etc. As per the Benchmark devised by Ministry of Urban Development, GoI, at least 20 *per cent* of the treated water should be reused/recycled. Audit scrutiny of performance in handling treated water disclosed the following:

2.1.12.1 Poor achievement in sale of treated water

As per the directions issued (June 2015) by the TNPCB, secondary treated sewage water should be mandatorily sold for use for non-potable purposes such as industrial process, railway & bus cleaning etc. Sale of treated water for non-potable purposes would bring down the consumption of drinking water for non-potable purpose and has the potential to earn revenue to CMWSSB.

Sale of treated water involves identifying potential buyers, signing MoUs with them, providing requisite pipelines for carrying the treated water and other related arrangements. CMWSSB has tied up with three major industries[23] and GCC for supply of treated water from only two[24] out of its 12 STPs. During 2014-19, CMWSSB supplied an average of 28.42 mld of secondary treated water to these industries and GCC earned an average revenue of ₹ 16.45 crore per annum. During the same period, 463.27 mld of treated water was let out into water bodies.

During the audit period, while the cost of treatment of sewage was in the range of ₹ 12.50 to ₹ 18.40 per KL, the sale price of treated water to industries was in the range of ₹ 12.49 to ₹ 16.16 per KL. Thus, the sale of treated water helps in reducing the city's dependence on fresh water for industrial uses and in augmenting the revenue of CMWSSB.

The achievement in sale of treated water being only 6.5 *per cent* as of March 2019, was well below the prescribed benchmark of 20 *per cent.* CMWSSB lost an opportunity to earn ₹ 175 crore per annum by achieving benchmark sale of 20 *per cent* of treated water. Instances of failures in meeting the demand for secondary treated water and tertiary treated water are discussed below:

- In July 2014, the Divisional Railway Manager (DRM), Southern Railway (SR), requested for 7.5 mld of treated water for use in the Railway Yard. CMWSSB decided (February 2015) to supply 7.5 mld treated water to SR from its proposed 10 mld tertiary

[23] Chennai Petroleum Corp. Ltd., Madras Fertilizers Ltd., and Manali Petro Products Ltd.

[24] Kodungaiyur STP and Nesapakkam STP.

treatment plant at Langs Garden, Chennai, close to the Railway Yard. The proposed tertiary treatment plant at Langs Garden, Chennai, was approved by GoTN in January 2015. The work on the plant, however, was started only in April 2019. As a result, the treated water requested by SR in July 2014 was not supplied even as of May 2020, as a result of which SR continued to consume potable water from CMWSSB for non-potable purposes.

- The Tariff Policy of Ministry of Power, GoI, envisaged (January 2016) that thermal power plants within 50 kms radius of STPs should mandatorily use treated sewage water produced by these STPs. Accordingly, GoTN directed (June 2017) CMWSSB to sign MoU with the five thermal power plants[25] located near STPs of CMWSSB for supply of treated water. From the correspondence exchanged between CMWSSB and the thermal plants, it was noticed that the plants were insisting for enhanced quality of treated water. Meanwhile, CMWSSB supplied an average of 13.79 mld of fresh water to the five thermal power plants, which could have been avoided had appropriate quality of treated water been supplied to these thermal power plants.

Thus, CMWSSB did not fulfill the existing demand for treated water, leading to continued supply of potable water to industrial and commercial establishments even as the city faced acute water scarcities.

2.1.13 Environmental issues in sewage treatment

2.1.13.1 Non-operation of biogas power generation plants

The sewage sludge includes organic matter. Decomposition of sludge releases sludge gas, which contains methane (60 to 70 *per cent),* carbon-di-oxide (25 to 35 *per cent*) and other gases. Methane and carbon-di-oxide are greenhouse gases (GHG), which contribute to global warming. CPHEEO Manual envisages provision of biogas plant in STPs to capture the combustible methane gas for generation of electricity, which provides two pronged benefits by cutting down emission of GHG and simultaneously reducing power consumption of the STP.

Audit found that 5 of 12 STPs of CMWSSB did not have the facility to generate electricity. Neither these plant had the facility to flare up methane gas to prevent direct releasing of GHG into atmosphere. In the remaining seven STPs, only four were generating electricity and the biogas plant in three others were under repair. Audit examined the measures initiated by CMWSSB to prevent GHG emission and noticed the following:

[25] NTECL and four TANGEDCO's coal based thermal power plants.

(a) Non-establishment of infrastructure facilities

The five STPs that did not have biogas generation facility were erected between 1974 and 2003. CMWSSB did not take any effort for retrofitting these STPs with biogas power generation plants. Based on CPHEEO's formula, Audit worked out that these five STPs theoretically released 15,676 m^3 of methane per day (5.72 million m^3 per annum). In an ideal situation, it could have been possible for CMWSSB to generate about 30,000 units of electricity per day during 2014-19, against their average energy requirement of 19,727 units of electricity per day during the same period.

It was also found that biogas power generation plants were not provided in the design for the three new STPs under construction at Avadi, Tambaram and Thiruvottiyur.

GoTN stated (April 2020) that the biogas plant work in Nesapakkam 40 mld STP was under litigation and the work for providing biogas plants in four STPs commenced in December 2019. Audit observed that lack of timely interventions delayed provision of biogas plants in these STPs.

(b) Non-working of biogas power generation units in STPs

In three STPs, the biogas power generation units were under repair for periods ranging from 37 to 43 months during 2014-19. Audit found that STPs were completely dependent on grid power for day to day operations and two of the STPs incurred ₹ 4.95 crore on electricity bills, which could have largely been avoided if the biogas plants were functional. Audit noticed that work orders for rehabilitation of the above STPs were issued in August 2019 with a scheduled period of completion of 18 months.

In the Exit Conference, the Executive Director stated that the issues would be resolved on implementation of scheme of rehabilitation of STPs.

2.1.13.2 Sludge disposal

Sludge is a by-product of sewage treatment. According to CPHEEO Manual, dried sludge may be used as fertiliser for lawns and for growing cash crops and fodder grasses and heat-dried sludge can be used as fertiliser along with farm yard manure. Further, using sludge as a land fill was not usually recommended as it could lead to surface water contamination and leaching into ground water.

Audit, however, found that CMWSSB had not taken any effort to convert the sludge as fertiliser. During 2014-19, the STPs of CMWSSB produced 42,644 MT of dried sludge. The entire quantity of dried sludge was spread over low lying areas adjoining the STP. By not taking effective action for disposal of sludge as fertiliser, CMWSSB lost opportunity for revenue generation through such sale and continued to cause threat to the environment.

2.1.14 Achievement against Service Level Benchmarks

Measuring service levels of civic agencies implies measuring outcomes, and indirectly also reflects on institutional capacity, financial performance and other parameters. The Handbook of Service Level Benchmarks (Benchmark) designed by Ministry of Urban Development of GoI is a ready reckoner to assess the quality of services, as discussed below:

(i) Against the benchmark of 100 *per cent* sewer network coverage, the coverage was only 60 *per cent* in CMA.

(ii) Against the benchmark of 20 *per cent* reuse/recycling of treated sewage, the achievement was only 6.5 *per cent*.

(iii) As per the benchmark for redressal of sewage related complaints, 80 *per cent* of the complaints were to be redressed within 24 hours of receipt. Details of complaints received and redressed by CMWSSB during 2014-19 are detailed in **Table 2.11**.

Table 2.11: Complaints and Redressal

Year	Number of sewerage/sewage complaints		Efficiency as per Benchmark as against a target of 80 *per cent*
	Received	Redressal within 24 hours	
2014-15	18,567	3,845	*20.71*
2015-16	28,023	5,102	*18.21*
2016-17	22,845	5,218	*22.84*
2017-18	31,255	6,721	*21.50*
2018-19	33,387	7,094	*21.25*

(Source: Records and data of CMWSSB)

Audit found that an average of only 20.9 *per cent* of the complaint were redressed within 24 hours during the years 2014-19, as against a target of 80 *per cent*. Further, the Benchmark envisages satisfactory resolution of the complaint being endorsed by the complainant in writing; however, CMWSSB did not institute this system.

(iv) The extent of cost recovery in sewage management was 5.91 *per cent* up to 2016-17, 4.55 *per cent* and 16.41 *per cent* for 2017-18 and 2018-19 respectively as against the Benchmark of 100 *per cent.*

(v) CMWSSB classified complaints under four categories and set redressal durations in its Citizen's Charter as follows (a) blockage of sewer line (mains) - 4 days, (b) house sewer block - 2 days, (c) sewage overflow - 4 days and (d) repair to damaged sewer line/renewal of sewer line - 20 days. Audit evaluated compliance by CMWSSB to the committed timelines and found that the achievement ranged (a) between 27 and 52 *per cent* in respect of blockage of sewer lines (main), (b) between 58 and 68 *per cent* in respect of house sewer block, (c) between 22 and 42 *per cent* in

respect of sewer overflow and (d) between 0 and 12 *per cent* in respect of renewal of sewer lines.

2.1.15 Conclusion

Despite according due importance and making substantial investment, the sewage network in CMA did not meet the needs of the growing population. Inadequate treatment capacity and unchecked illegal discharge of untreated sewage continued to pollute the waterways. As a result, there was no improvement in the outcomes in terms of reduced pollution load in the water bodies in CMA. All project suffered abnormal delays due to sluggish pace of project implementation and lack of comprehensive planning. Failure to achieve the benchmark sale of secondary treated water, poor achievements in biogas power generation and non-conversion of sludge into manure contributed adversely to the environment, besides resulting in lost opportunities to augment revenue through these efforts**.**

2.1.16 Recommendations

In line with the audit findings, the following recommendations are made:

- Government should formulate CMA-wide City Sanitation Plan in line with NUSP for a focused approach and time-bound execution of interconnected projects.
- Government may consider putting in place an institutional mechanism for ensuring coordination of all line departments in implementing UGSS.
- CMWSSB should ensure availability of work site and all mandatory clearances from line departments before awarding tenders for UGSS.
- CMWSSB needs to focus on ensuring the quality of sewage treatment by commissioning independent audit of water quality and performing all recommended laboratory tests.
- CMWSSB should be sensitive to the environmental issues by increasing reuse of treated water, minimising release of greenhouse gases into atmosphere and converting sludge into manure.

CHAPTER III
COMPLIANCE AUDIT

CHAPTER III

COMPLIANCE AUDIT

Compliance Audit of Departments of the Government and their field formations as well as autonomous bodies brought out several lapses in management of resources and failures in observance of norms of regularity, propriety and economy. These have been presented in the succeeding paragraphs.

HEALTH AND FAMILY WELFARE DEPARTMENT

3.1 Compliance Audit on 'Implementation of Chief Minister's Comprehensive Health Insurance Scheme'

3.1.1 Introduction

The Government of Tamil Nadu (GoTN) launched the Chief Minister's Comprehensive Health Insurance Scheme (CMCHIS) in the State from 11 January 2012. The objective of CMCHIS was to provide quality health care to eligible persons through empanelled Government and private hospitals. GoTN appointed Tamil Nadu Health Systems Project (TNHSP) as the implementing agency and through tender process, selected United India Insurance Company Limited (UIIC) as the Insurance Company for both Term I[1] and II[2] of CMCHIS. The Project Director (PD), TNHSP, heads the implementation of the scheme. The scheme covers all resident families of Tamil Nadu with annual family income of ₹ 72,000 or less. CMCHIS was integrated with Pradhan Mantri Jan Arogya Yojana (PMJAY), which was introduced in the State from September 2018 and operationalised from December 2018. Audit of implementation of CMCHIS, covering the period from 5th to 7th policy years[3], was conducted between April and August 2019 at TNHSP and nine Government hospitals selected through statistical sampling method.

Audit Findings

3.1.2 Enrolment of beneficiaries

All families having a family card and an annual income of less than ₹ 72,000 are enrolled as beneficiaries under CMCHIS based on income

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1 Term I of five years commenced from 11 January 2012 and ended on 10 January 2017 - Year I or 1H - 2012-13, 2H -2013-14, 3H-2014-15, 4H-2015-16 and 5H-2016-17.

2 Term II of four years commenced from 11 January 2017 (6H) and continues up to 10 January 2021 - 6H-2017-18, 7H-2018-19, 8H-2019-20 and 9H-2020-21.

3 11 January 2016 to 10 January 2019.

certificate issued by Revenue Authorities[4] and self-declaration of the head of the family. Orphans, families having differently-abled persons, migrant workers and Sri Lankan refugees are eligible for enrolment without income limit.

3.1.2.1 Non-coverage of eligible beneficiaries

The scheme guidelines provide for enrolment of orphans, migrant workers and Sri Lankan refugees without any income limit. Audit noticed that

- 1,235 government and private orphanages in the State housed 55,384 orphans. Of these, only 664 out of 2,687 children staying in Government run orphanages were enrolled, which was only about one *per cent* of the total orphan children in the State.
- Against 32,555 Sri Lankan refugee families living in the State, only 4,815 families were enrolled (15 *per cent*).
- None of the 21,538 identified migrant workers were enrolled.

Audit found that no system was put in place to enroll all the eligible beneficiaries from these sections of the society by liaising with the line departments concerned. On being pointed out by Audit, GoTN replied (January 2020) that enrolment of orphans, Sri Lankan refugees and migrant workers was under progress with the assistance of District Administration and departments concerned. Thus, the Government's objective of bringing the marginalised sections of the society under CMCHIS to reduce their financial hardship was not achieved, rendering these vulnerable sections bereft of a medical cover.

3.1.2.2 Ineligible beneficiaries

(a) GoTN issued Priority House Hold (PHH) family cards under the Public Distribution System (PDS) to families having an annual income of not more than ₹ 1 lakh. As of May 2019, there were 96.46 lakh PHH families under the State PDS. However, CMCHIS with an annual income criteria of less than ₹ 72,000 had 1.57 crore (5H) and 1.47 crore (6H and 7H) beneficiaries. Audit observed that as the number of families with income less than ₹ 1 lakh, based on income criteria of PHH cards, was only 96.46 lakh, the number of families with income less than ₹ 72,000 could not be more than 96.46 lakh. However, enrollment of families under CMCHIS, in excess of 96.46 lakh indicated the lack of proper system to enforce the income eligibility criterion in enrolment of beneficiaries under CMCHIS. On being pointed out by Audit, GoTN replied (January 2020) that action would be taken for weeding out/updating CMCHIS health insurance cards as per updated PDS.

[4] Village Administrative Officers (VAOs) in rural areas and Revenue Inspectors in urban areas.

Audit worked out that the notional financial loss, during 2016-19, on account of excess payment of insurance premium in respect of the ineligible beneficiaries yet to be weeded out was ₹ 1,014.66 crore as given in **Table 3.1**.

Table 3.1: Excess payment of insurance premium

Policy Year	Enrolled beneficiaries	Enrollment in excess of 96.46 lakh PHH card families	Insurance Premium paid per beneficiary (₹)	Avoidable premium payment (₹ in crore)
5H	157.16 lakh	60.70 lakh	497	301.68
6H	147.46 lakh	51.00 lakh	699	356.49
7H	147.46 lakh	51.00 lakh	699	356.49
Total				**1,014.66**

(Source: Details furnished by TNHSP)

(b) Audit compared the beneficiary data with the data of State Government pensioners and found that 1.08 lakh pensioners, whose annual pension exceeded ₹ 72,000, were enrolled under CMCHIS. On account of this, GoTN incurred an avoidable premium payment of ₹ 20.19 crore during 2016-19. GoTN replied (January 2020) that CMCHIS data would be checked with pensioners', Government employees, ESI and CGHS data.

(c) Analysis of the electronic database of beneficiary details furnished by TNHSP disclosed that during 2009 to 2015, 0.83 lakh duplicate CMCHIS cards were issued to families with one ration card. As only one card was allowed per family and insurance premium is paid based on number of cards, issue of more than one card per family resulted in avoidable insurance premium of ₹ 15.64 crore during 2016-19 on these ineligible cards.

GoTN replied (January 2020) that in order to improve access to health care, more than one insurance card were issued with a single ration card number as newly formed families did not possess ration cards. GoTN, further, stated that action would be taken to check misuse of this facility. As the system of allowing more than one card per family is prone to a higher risk of misuse, the Government must relook at its policy. Such a leniency, though good intended, would lead to proliferation of insurance cards, and consequently higher premium outgo as the premium amount is calculated based on the number of insurance cards.

3.1.3 Empanelment of hospitals

Government and private hospitals get empanelled as network hospitals under CMCHIS through an online application and inspection process.

As of March 2019, a total of 1,008 hospitals were empanelled under CMCHIS comprising of 265 government hospitals and 743 private hospitals**.** The related issues are discussed below.

3.1.3.1 NABH accreditation not obtained by empanelled hospitals

With a view to provide quality health care, the CMCHIS guidelines stipulate that (i) all empanelled private hospitals are required to obtain entry level accreditation from the National Accreditation Board for Hospitals and Healthcare Providers (NABH) within one year of empanelment, and (ii) Government hospitals should also be accredited under the National Quality Assurance Standards (NQAS) framework of the Health and Family Welfare Ministry.

Audit found that as of March 2019, only 13 out of the 265 Government hospitals obtained the required accreditation under NQAS. Out of 651 private hospitals empanelled under Term II as of March 2018[5], 307 hospitals did not have the prescribed entry level NABH accreditation as per details furnished by TNHSP. As no supporting documents/records were produced to Audit to vouch for the correctness of the status of NABH accreditation, Audit independently compiled data relating to NABH accredited hospitals in Tamil Nadu from NABH website. Analysis of NABH data (updated up to March 2019) relating to 651 empanelled private hospitals revealed the following.

(i) 251 hospitals did not obtain NABH accreditation even after the lapse of one year.

(ii) NABH accreditation of 64 hospitals had expired. The period of expiry ranged from 1 to 28 months.

(iii) 154 hospitals were accredited belatedly (delay of 1 month to 12 months) after the expiry of the grace period of one year.

During March 2018 to March 2019, 1.10 lakh out of the 1.80 lakh private hospital patients under CMCHIS had availed treatment in non-NABH private hospitals. On being pointed by Audit, GoTN replied (January 2020) that only 14 *per cent* of the hospitals had not got into the NABH process and the remaining 86 *per cent* were at various levels of accreditation. Audit observed that the objective of the scheme was to provide quality health care and the quality of health care is assured by NABH accreditation by ensuring availability of infrastructure and manpower with reference to the benchmarked standards for accreditation. Therefore, continuing with non-NABH hospitals defeated the objective of ensuring quality medical care.

3.1.3.2 Issues in empanelment

Based on formal application by hospitals and inspection by the Insurance Company, hospitals get empanelled under CMCHIS. Empanelled hospitals which do not adhere to the terms of empanelment get de-empanelled. Deficiencies in the empanelment of hospitals are discussed below:

[5] In order to verify the NABH accreditation status as on March 2019 by allowing the 12 months grace period, only hospitals empanelled up to March 2018 were considered.

- During 2016-19, 57 hospitals which treated less than 10 patients were not de-empanelled as per agreement conditions, whereas 36 hospitals which treated more than 10 patients were de-empanelled. On being pointed out by Audit, GoTN stated that de-empanelment was a policy/administrative decision of the implementers to decide on the low level of performance by comparing with rest of the hospitals. The reply was not tenable as proper reasons were not attributed for de-empanelment.

- Empanelled private hospitals are awarded grading from A1 to A6 for medical and diagnostic procedures and S1 and S2 for surgical procedures based on facilities available in the hospitals. Package rates for different procedures are fixed based on the grade of the hospital, with A1 and S1 getting the highest rate and A6 and S2 getting the lowest rate. Grades were to be awarded based on the score obtained by the hospitals in the empanelment inspection. Multispecialty hospitals scoring 31 to 40 out of the maximum score of 100 are awarded the lowest grade of A6 and those scoring above 80 out of 100 are awarded the highest grade of A1. Similarly, for surgical package, the highest grade of S1 is awarded to hospitals with scores above 40 out of the maximum score of 50 and other hospitals are awarded S2 for package rate purpose. Audit found that 10 hospitals were awarded higher grades than what was eligible as per their score, and 11 hospitals were awarded lower than the eligible grades. This resulted in wrong guidance to patients on the quality of the hospitals. On being pointed out by Audit, GoTN replied (January 2020) that the error would be rectified.

3.1.4 Financial management

Budgetary allocations from Government are the main source of funds for the scheme. In addition, 28 *per cent* of the claim amount received by Government hospitals is ploughed back into the scheme towards meeting expenditure on notified high-end medical procedures, which is partially covered under the insurance policy, and for IEC activities. Penalties collected and interest earned are other sources of funds.

Premium payment, cost of printing health insurance cards, salaries of contract staff[6], capital and maintenance expenditure, reimbursement for high-end procedures, IEC activities, etc., constitute the categories of expenditure.

The insurance premium was worked out based on the number of beneficiaries enrolled under the scheme and Government bears the entire premium amount

6 The pay and allowances of regular employees who are deputationists are met from the budgetary allocation.

payable to UIIC. Details of the premium paid and claims settled for fifth, sixth and seventh policy years are shown in **Table 3.2**.

Table 3.2: Details of premium paid and claims settled

Year	Policy period	Premium paid (₹ in crore)	Claim settled (₹ in crore)		
			Govt. Hospitals	Pvt. Hospitals	Total
2016-17	5H	781.04	252.61	535.72	788.33
2017-18	6H	1,030.96	302.57	574.81	877.38
2018-19	7H	1,031.14	323.53	522.35	845.88
	Total	**2,843.14**	**878.71**	**1,632.88**	**2,511.59**

(Source: Details furnished by TNHSP)

3.1.4.1 Corpus Fund

In order to enable the needy and poor to undergo expensive surgical treatment like cochlear implant, liver transplantation, renal transplantation, bone marrow transplantation, etc., the Government in November 2012 created a Corpus Fund with an initial amount of ₹ 10 crore. The Corpus Fund maintained by TNHSP had accretions by way of assignment of 27 *per cent* of the claim amount released by the Insurance Company to Government hospitals. In addition, penalties collected from errant network hospitals and the interest accrued in the Savings Bank account of Government network hospitals were also credited to the fund. During 2016-19, ₹ 263.31 crore[7] accrued to the Corpus Fund. The Fund was mainly meant to meet the package cost of high-end procedures over and above the maximum of ₹ 2 lakh[8] fixed for specialised procedures.

As of March 2019, expenditure of ₹ 233.07 crore was met from the corpus fund. Of this, expenditure incurred towards reimbursement for high-end procedures was ₹ 194.96 crore (84 *per cent*).

3.1.4.2 Information, Education and Communication (IEC) Fund

As per extant Government orders, one *per cent* (part of 28 *per cent*) of receipts of Government network hospitals under CMCHIS, was to be utilised for IEC activities. Government in January 2016 created an IEC Fund and instructed the Insurance Company to remit the money directly into a separate bank account maintained by TNHSP for that purpose. During 2016-19, ₹ 9.04 crore accrued to the fund and ₹ 5.37 crore was incurred as IEC expenditure by TNHSP, mainly on sending IEC pamphlets by post to all beneficiaries. As no guidelines for utilising IEC funds were issued by the Government (August 2019), the proposals received from various hospitals for IEC activities were pending approval. On being pointed out, PD, TNHSP

[7] ₹ 227.16 crore by way of 27 *per cent* of insurance claims by Govt. Hospitals, ₹ 13.41 crore by way of interest receipts, ₹ 1.13 crore through penalties levied on empanelled hospitals and ₹ 21.61 crore from other sources.

[8] ₹ 1.5 lakh till 5H and ₹ 2 lakh in 6H & 7H.

replied (October 2019) that after receipt of guidelines from the Government, necessary actions would be taken for approval of pending proposals.

Audit observed that non-framing of guidelines for IEC activities, even after seven years of launching the scheme had resulted in inability of hospitals to familiarise the scheme through IEC activities. Audit found that while the percentage of enrolled beneficiaries who availed benefit under the scheme in the predominantly urban districts of Chennai, Madurai and Tiruvallur was 4.61 *per cent*, 3.89 *per cent* and 3.67 *per cent* respectively, the percentage in the rural districts of Krishnagiri, The Nilgiris and Thiruvarur were much lower at 1.90 *per cent*, 1.94 *per cent* and 2.08 *per cent* respectively. The low penetration of scheme in rural districts pointed to the need for more IEC activities for the scheme.

GoTN accepted the audit point and stated (January 2020) that action would be taken for framing guidelines and to ratify the expenditure incurred.

3.1.5 Implementation of CMCHIS in network hospitals

The empanelled hospitals extend cashless treatment to the beneficiaries for the identified 1,027 medical/surgical procedures. To avail treatment under the scheme, the beneficiary has to approach any network hospital for admission. On verification of eligibility under CMCHIS, the hospitals decide the course of treatment and approach the Third Party Administrator (TPA[9]) of the Insurance Company for pre-authorisation to provide the treatment. The TPA verifies the medical and non-medical records of the patients, as submitted by the hospitals, and after satisfying the eligibility of the patient and the need for the treatment proposed, issues pre-authorisation. After the pre-authorisation by the TPA, the hospital provides treatment to the patients. In respect of emergency cases, the hospitals can admit the patient after verifying eligibility with the TPA and start treatment, pending receipt of pre-authorisation. Audit reviewed the data maintained by the Insurance Company in digital format, as furnished by TNHSP. Audit observations are as follows:

3.1.5.1 Pre-authorisation and claims

A comparison of pre-authorisation 'cancelled' by the hospitals themselves and 'not approved' by the TPA in Government and private hospitals are shown in **Chart 3.1** and **Chart 3.2**. It revealed that the Government hospitals had higher incidence of cancellation and non-approvals. Pre-authorisation can be cancelled for valid reasons. Higher percentage of cancellation of pre-authorisation by Government hospitals pointed to higher withdrawal of patients from treatment after initially approaching the hospitals for treatment, which could possibly be on account of patients being dissatisfied with the course of treatment.

[9] Third Party Administrator - The agency which liaise between hospitals and the insurer.

Chart 3.1: Pre-authorisation cancelled (*per cent* and numbers (in bracket))

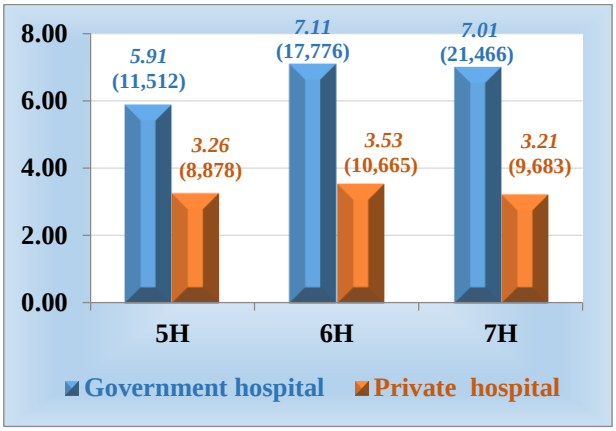
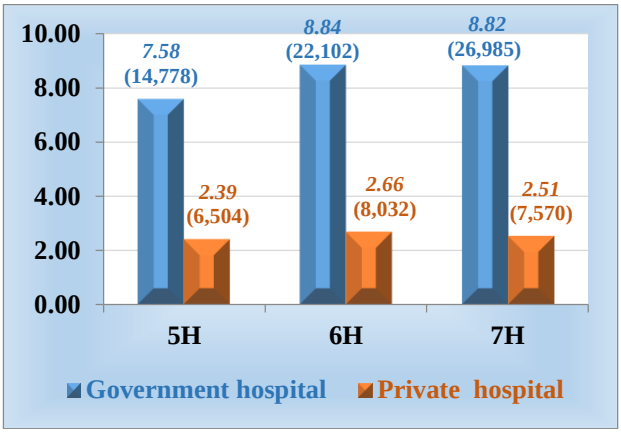


Chart 3.2: Pre-authorisation not approved (*per cent* and in numbers (in bracket))



(Source: Compiled from TNHSP/UIIC Data)

➢ It was found that pre-authorisation was not received from the Insurer within the stipulated two days in 18 *per cent* of cases during 5H, 6H and 7H. Delay in pre-authorisation with consequent delay in starting treatment would adversely impact the patients availing benefits under the scheme. From the database maintained, Audit found that it was not possible to conclude whether TPA or the hospital was responsible for the delay. In the exit conference, Director, TNHSP agreed to make suitable modification in the software.

Claim: The treating hospitals prefer their claims with the Insurance Company based on the pre-authorisation and treatment given to the patient. Details of pre-authorisation approved, claims submitted by the hospitals, that were not submitted, not approved (both denied and need more information) and approved by the Insurance Company during 5H to 7H are given in **Table 3.3**.

Table 3.3: Details of claims submitted and approved

Policy year	Pre-authorisation approved by the Insurance company	Claims submitted by hospitals	Claims not submitted by hospitals	Claims not approved	Claims approved
5H	4,25,701	4,22,033	3,668	4,901	4,17,132
6H	4,93,350	4,88,897	4,453	8,431	4,80,466
7H	5,41,526	5,33,869	7,657	9,204	5,24,665
Total	**14,60,577**	**14,44,799**	**15,778**	**22,536**	**14,22,263**

(Source: Compiled from TNHSP/UIIC Data)

➢ A comparison of claims not submitted and not approved revealed that Government hospitals had higher incidence of non-submission and non-approvals as depicted in **Charts 3.3 and 3.4**.

Chart 3.3: Claims not submitted (in *per cent*)

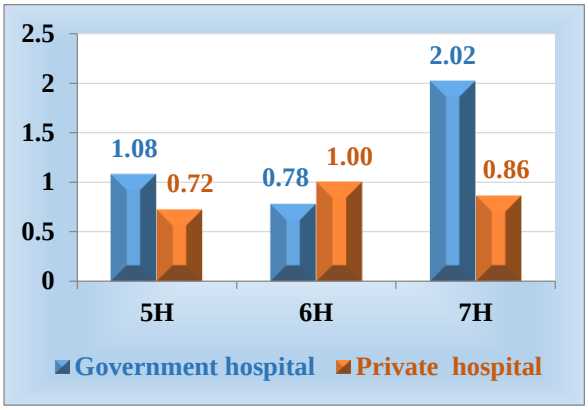
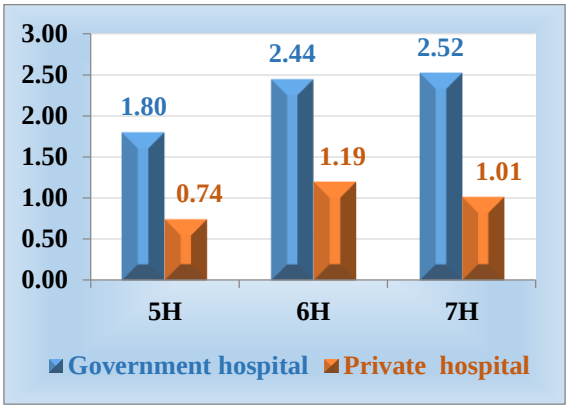


Chart 3.4: Claims not approved (in *per cent*)



(Source: Compiled from TNHSP/UIIC Data)

- The increasing trend in the number of not submitted claims (**Table 3.3**), which represents patients/hospitals withdrawing from treatment for various reasons, was a matter of concern. Audit observed that delay of more than two days in pre-authorisation was one of the possible reasons in respect of 5,100 out of 15,778 cases patients withdrawing from treatment after approaching the hospital for treatment.

- The Insurance Company was prompt in settlement of claims preferred by network hospitals. Over 99 *per cent* of claims were settled within seven days of filing the claim. It was, however, found that the claim amount settled, after the stipulated seven days, was on an increasing trend from ₹ 0.28 crore in 2016-17 to ₹ 10.07 crore in 2018-19. During 7H, claim settlements in respect of 4,187 cases were delayed by 7 to 30 days; and in 1,432 cases the delay exceeded 30 days. Delays in settlement of claims will impact the scheme's receptiveness among network hospitals.

On being pointed by Audit, GoTN replied (January 2020) that there are challenges in building capacity in the Government system on insurance claims in view of transfers, retirements, etc. The reply was untenable as the "challenges in capacity building", even after eight years of launching the scheme, pointed to deficiency in administering the scheme requiring concerted action at the Government level.

3.1.5.2 Government reserved procedures performed in private hospitals

Under CMCHIS, 84 procedures were reserved for being carried out only in Government hospitals based on facilities available and to avoid misuse by private hospitals. Any violation of the condition would result in levy of penalty on the Insurance Company at a minimum of five times the amount of expenditure incurred for each instance of violation.

Audit analysis of 6H and 7H data disclosed that 1,614 cases of medical/surgical procedures, reserved for Government hospitals involving ₹ 2.53 crore, were performed in private network hospitals during 2017-19.

This violated the agreement conditions and points to the Insurance Company's inadequate control over its operations which resulted in revenue foregone to Government hospitals to the tune of ₹ 2.53 crore. Audit also noticed that TNHSP failed to levy penalty on the Insurance Company for violating the agreement conditions. GoTN replied (January 2020) that the instances pointed out by Audit would be examined for taking necessary action.

3.1.5.3 Pre-authorisation permitted during suspension period

During January 2016 to March 2019, 18 private network hospitals were suspended as a punitive measure for negligent treatment, poor medical assessment, manipulation of medical reports, poor documentation, etc. The suspension was applicable either to all departments or any particular department of the hospital concerned except for dialysis and it ranged from one to three months. Audit found that notwithstanding the suspension, five suspended hospitals/departments continued to treat patients during its suspension period. The Insurance Company honoured 305 claims for a total value of ₹ 1.61 crore, raised by the suspended hospitals/departments for services rendered during their suspension period. This indicated lack of controls and defeated the deterrent nature of suspension. GoTN replied (January 2020) that irregularities pointed out by Audit would be examined and necessary action would be taken.

3.1.5.4 Non-utilisation of smart card features of CMCHIS health insurance cards

Under CMCHIS, a smart card, embedded with microprocessor chip, with facility to store the bio-metrics of all members of the beneficiary family is issued to beneficiaries. The objective of the smart card is to simplify beneficiary identification at hospitals using card readers to provide hassle free service to beneficiaries. At the end of Term I, 1.57 crore smart cards costing ₹ 78.62 crore (cost per card ₹ 50 x 1.57 crore beneficiaries) were issued. In Term II, similar provisions were included in tender conditions by which, the Insurance Company had to ensure that the biometric devices for the online Aadhaar validation were maintained by the network hospitals.

Audit undertook joint physical verification in the nine test-checked hospitals. It was found that none of the hospitals carried out the envisaged beneficiary identification through smart cards due to non-availability/non-functioning of bio-metric card reading devices. Instead, the facility to generate Unique Reference Number (URN) using family card and Aadhaar cards was used for identifying the beneficiaries. In reply to the audit enquiry, seven of the nine test-checked hospitals stated that they were either not issued the card reader devices or the devices supplied were not functioning due to software issues.

Thus, the envisaged system to simplify beneficiary identification did not function despite incurring huge expenditure. GoTN replied (January 2020) that there were challenges in linking the smart card with Aadhaar data and necessary action would be taken in this regard to replace the smart card.

3.1.6 High-end procedures

As the ceiling prescribed for benefits under the insurance cover was only ₹ 2 lakh, in respect of high-end procedures (HEP) such as kidney transplant, heart transplant, lungs transplant, cochlear implant, etc., the beneficiaries are helped using the Corpus Fund maintained by the TNHSP. Details of HEPs carried out in the network hospitals during 2016-19 are exhibited in **Chart 3.5 and 3.6**.

Chart 3.5: Number of High-end procedures performed

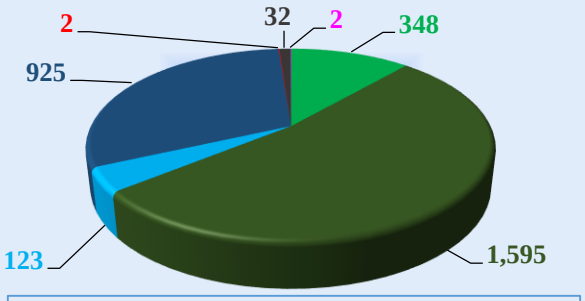
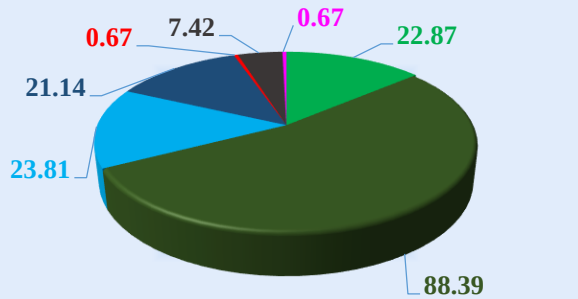


Chart 3.6: Value of High-end procedures performed (₹ in crore)



(Source: TNHSP/UIIC data)

The status of NABH accreditation and grading of 41 private network hospitals performing HEPs during Term II disclosed that only 23 private network hospitals had NABH accreditation. Thus, the quality of these HEPs were not ensured.

3.1.6.1 Procurement of cochlear implant at higher rates under HEP

Cochlear implant[10] is a high-end procedure performed in 3,425 cases under CMCHIS since its inception in 2013 to May 2019 in Government and private network hospitals. The package cost for this procedure was initially fixed (2013) between ₹ 7.01 lakh to ₹ 7.90 lakh, depending on rates offered by hospitals (₹ 7.01 lakh for Government hospitals) per patient. The major component of the package was the cochlear device, the cost of which was fixed as ₹ 5.35 lakh.

In May 2017, TNHSP came to know of the decrease in the price of the cochlear device based on a tender awarded to a firm by Kerala Social Security Mission (KSSM) for supply of cochlear implant at a lower cost of ₹ 3.84 lakh

[10] A surgically implanted device to restore hearing in cases with diseases of inner ear or the auditory nerve.

per implant. Accordingly, the package cost of cochlear implant surgery under CMCHIS was also reduced by ₹ 0.71 lakh to ₹ 1.51 lakh, depending on hospital, to match the price offered to KSSM. The revision was communicated (June 2017) to all network hospitals to procure the implants at a cost of ₹ 3.84 lakh or less. Audit found that TNHSP did not call for any tender even after coming to know of the tender awarded by KSSM.

Audit observed that the failure to periodically review the package rate had resulted in continued payment of ₹ 5.35 lakh for cochlear devices which had come down substantially as seen from KSSM's tender of October 2016. During the period between the month following the reduction of package rate by KSSM and the date of reduction of package rates by TNHSP, 416 cochlear implants were done and the excess expenditure on this count was ₹ 6.10 crore.

It was further observed that subsequent to the downward revision of price in July 2017, the GST on cochlear implant device was reduced in November 2017 from 5 *per cent* to 2.5 *per cent* and the custom duty of components of cochlear implant was reduced from 2.5 to 0 *per cent* in February 2018. The effects of these tax cuts should have been taken into account for further revision of package rate.

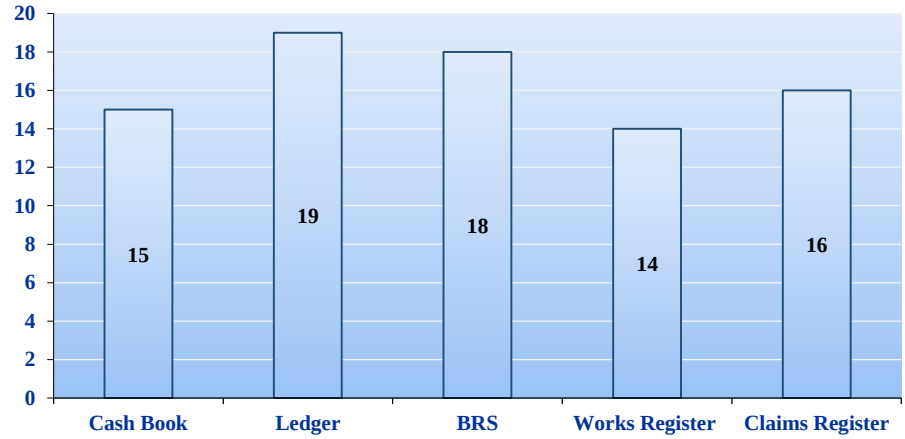
GoTN stated (January 2020) that the package cost was fixed based on actual cost/market condition. The reply was not tenable as no attempt was made to revise the package rate for more than four years.

3.1.7 Maintenance of accounts and registers

All Government hospitals empanelled under CMCHIS were required to maintain uniform accounts of transactions relating to the scheme with appropriate records such as Cash book, Ledger, Cheque Register, Bank Reconciliation Statement (BRS), Claim Register, Register of Works, etc.

During physical verification (June and July 2019) carried out by Audit in the 46 test-checked hospitals/departments, it was seen that many of them did not maintain the envisaged records as given in **Chart 3.7**.

Chart 3.7: Number of hospitals/departments not maintaining the prescribed records



Non-maintenance of stipulated records heightens the risk of diversion, misappropriation of funds, etc., and falsification of records. On being pointed by Audit, GoTN replied (January 2020) that orders had been issued for maintenance of accounts and was being monitored by Director of Medical Education (DME) and Director of Medical and Rural Health Services (DMRHS).

3.1.8 Monitoring

3.1.8.1 Complaint redressal mechanism

(i) At the district level, a District Monitoring and Grievance Committee (DM&GC) headed by the District Collector monitors the complaints relating to difficulty in availing treatments, lack of facilities, etc. In the test-checked Tirunelveli district, 11 complaints received against private hospitals during 2017-19 were disposed off without holding DM&GCs meetings. Seven complaints received at TNHSP were referred to the respective DM&GCs and five were pending as of March 2019. Thus, there was lack of effective grievances redressal mechanism at district level. PD, TNHSP, replied that TNHSP would ensure better monitoring in the coming days.

(ii) Any grievances and appeals against the decision of the DM&GCs should be preferred with the State Monitoring and Grievance Committee (SM&GC). Any dispute arising out of the implementation of the scheme which remained unresolved at SM&GC will be referred within 15 days to a High-Level Committee. However, SM&GC and High-Level Committee were formed only in October 2019.

3.1.8.2 Complaints against private network hospitals

CMCHIS guidelines provide for levy of penalty on network hospitals for deficiencies in services. The penal action on the negligent hospital is enforceable through the Insurance Company.

Details of complaints against network hospitals received through online portal/call centre during 2016-19 are shown in **Table 3.4**.

Table 3.4: Online portal/Call centre complaints against network hospitals

Sl. No.	Nature of complaint against private network hospitals	Number of complaints received			
		5H	6H	7H	Total
1	Money demanded/received etc.,	56	83	113	252
2	Treatment denied/Pre-authorisations cancelled	3	4	2	9
3	Unsatisfactory treatment	3	6	5	14
	Total	**62**	**93**	**120**	**275**

(Source: Details furnished by TNHSP)

Audit sampled 112 out of the 275 complaints received against 28 panel hospitals.

- Multiple complaints received against 14 network hospitals (ranging from 2 to 28) were treated as a single complaint. Clubbing of multiple complaints raised on different occasions allowed the delinquent hospitals to get off lightly.
- Though the minimum stipulated penalty was five times the money collected by the hospitals, it was not levied in 91 cases.
- Even though the Insurance Company was also liable, no punitive action was taken on the Insurance Company.

GoTN replied that a few concessions were provided to ensure continuity of service and treatment to the beneficiaries. It also stated that repeated offenders would be levied higher penalty and suspension.

3.1.8.3 Non-monitoring of network hospitals

As per scheme guidelines, the functioning of network hospitals were to be monitored by TNHSP, through the Insurance Company. Analysis of different medical procedures carried out by hospitals in various districts disclosed that 12 hospitals in Namakkal district performed 3,847 Total Knee Replacement (TKR) surgeries during 2016-19, of which 3,322 surgeries (86 *per cent*) were done by three private hospitals. The number of TKR surgeries conducted in Namakkal district was 23.1 *per cent* of the total number of TKRs done at State level. Considering that the total enrolled beneficiaries in the district was only 2.6 *per cent*, the number of TKRs in Namakkal was abnormal. TNHSP had not monitored the large number of surgeries as to whether they were need based or not. GoTN replied (January 2020) that to avoid misuse, instructions had been issued to UIIC to insist for second medical opinion from nearby Government Medical College Hospitals.

3.1.8.4 Deficiencies in CMCHIS database

Data analysis of cases processed and settled during 5H to 7H years (2016-19) disclosed the following inconsistencies.

(i) Family Card number is identified by a unique standardised 10 character (alphanumeric) length. Audit found that in 1,12,502 records non-standardised details of varying length were captured and stored in the field meant for storing Family Card number, indicating deficiencies in data capturing and need for validation checks to be inbuilt.

(ii) Discrepancies between date of admission and date of discharge were noticed in 613 cases wherein the beneficiary patient was shown as discharged prior to the date of admission into the hospital.

(iii) In 1,984 instances, pre-authorisations were raised even before the beneficiary patient was admitted to the hospital.

As the above inconsistencies arose due to the absence of validation controls, to prevent the recurrence of inconsistent data creeping into the database there was a need to address these lacunae in the system. GoTN stated (January 2020) that necessary action would be ensured for suitable validation control.

3.1.9 Conclusion

- There was no mechanism for verification/periodic updation of family income and exclusion of ineligible families.
- Marginalised categories like orphans, migrant workers and Sri Lankan refugees were not adequately enrolled as a suitable system was not put in place.
- Quality of medical care could not be fully ensured due to non-insisting of the mandatory NABH accreditation.
- Instances of delayed pre-authorisation showed an increasing trend leading to delay and possible denial of treatment to needy patients.

3.1.10 Recommendations

- Government may give wide publicity and launch a special drive to enroll orphans, migrant workers and Sri Lankan refugees.
- Time bound action should be initiated to obtain NQAS accreditation for all empanelled government hospitals; and fulfillment of conditions regarding NABH accreditation of empanelled private hospitals should be ensured.
- Government reserved procedures should not be allowed to be performed by private hospitals; and the Insurance company should be made accountable for issuing pre-authorisation to private hospitals during suspension periods.

MUNICIPAL ADMINISTRATION AND WATER SUPPLY DEPARTMENT

3.2 Compliance audit on solid waste management in Coimbatore City Municipal Corporation

3.2.1 Introduction

Solid Waste Management (SWM) is a crosscutting issue that affects and impacts various areas of sustainable development *viz*., living conditions, sanitation, public health and the sustainable use of natural resources. Sustainable Development Goals (SDGs) envisages environmentally sound management of all wastes in order to minimise their adverse impacts on human health and the environment. Government of India notified (April/ June 2016) the Solid Waste Management Rules, 2016 (SWM Rules) under Environment (Protection) Act, 1986 to regulate the management and handling

of the solid waste. Further, it published the Municipal SWM Manual 2016 (SWM Manual) to assist the States to understand and implement the SWM system effectively. Accordingly, Coimbatore City Municipal Corporation (CCMC) notified the SWM Bye-laws in July 2017.

CCMC, which is spread over an extent of 257.36 square kilometers (sq.km.), has five zones comprising 100 wards with a population of 16 lakh as per 2011 census. The city generates an average of 1,000 tonnes per day (TPD) of solid wastes. CCMC carries out the SWM activities through its Public Health wing[11] headed by the City Health Officer and Engineering wing[12] headed by the City Engineer. Land measuring 654.54 acres at Vellalore (dump yard) was identified to carry out the SWM activities pertaining to processing, recycling, treatment and disposal of solid wastes. These activities are being carried out by CCMC through (i) Processing Plant[13] of 600 TPD capacity engaged under Public Private Partnership (PPP) mode, (ii) Vermicomposting[14] facility of 100 TPD capacity and (iii) two Bio-methanation[15] plants of 1.5 TPD capacity each at Vellalore and a Bio-methanation plant of one TPD capacity at Nanjundapuram Gasifier Crematorium.

The objectives of the Compliance Audit was to ascertain whether (i) planning, financial management and compliance of SWM Rules were complete and effective, and (ii) SWM was efficient, effective and carried out economically and scientifically. An entry conference was held on 10 April 2019 with the Principal Secretary, Municipal Administration and Water Supply (MAWS) Department, in which the audit methodology, objectives and criteria were explained. Audit conducted test check of records at the offices of the Principal Secretary, MAWS Department, Commissioner of Municipal Administration (CMA), Tamil Nadu Pollution Control Board (TNPCB), CCMC and its Zones from April to July 2019 covering the period 2016-19. Twenty five wards[16] were selected for Joint Field Visit (JFV) through random sampling covering five wards under each Zone.

11 Sanitary workers (regular-2,748, outsourced-2,308 and other staff 113).

12 One Assistant Executive Engineer and one Assistant Engineer.

13 Mechanised plant for segregation of solid waste for recycling, further processing, landfilling etc.

14 Process of decomposing biodegradable wastes using earth worms. The waste is converted into organic manure.

15 Decomposing wet biodegradable waste under anaerobic condition for producing electricity using methane gas generated during the decomposition process.

16 Central Zone: Wards - 80, 83, 68, 70 and 71; East Zone: Wards - 35, 57, 58, 60 and 69; North Zone: Wards - 39, 46, 41, 02 and 03; South Zone: Wards - 96, 95, 85, 89 and 90; West Zone: Wards - 23, 6, 7, 16 and 8.

Audit findings

3.2.2 Planning and Financial Management

3.2.2.1 Incorrect estimation of generation of solid waste in the action plan

SWM Rule 11(a) read with Rule 15(a) stipulates preparation of State Policy by the State Government within a year from the date of notification of the Rules and SWM Plan by the local authority within six months thereafter, for implementation. Government of Tamil Nadu formulated the State Policy in August 2018 which highlighted the issue relating to inadequate planning in SWM and emphasised on the need for implementation strategies to ensure uninterrupted delivery of service. Audit scrutiny revealed that CCMC had prepared a SWM Policy and Action Plan (Plan) in August 2019, but the same was not notified as of February 2020.

A perusal of the SWM Plan revealed that the population of the city was taken as 18.31 lakh (City population of 16.66 lakh *plus* floating population of 1.65 lakh), as of 2019, for the purpose of SWM Plan. However, scrutiny of records revealed that the population of the city after its expansion by merging three municipalities, seven town panchayats and one village panchayat was 16.66 lakh in 2011. It was also found that as per Census 2011, the city had registered a decadal growth rate of 27 *per cent*. The SWM Plan, however, did not consider the projected population as per the decadal growth, as of 2019 for estimation of the solid waste generated. Further, CCMC did not conduct any survey to estimate the generation of solid waste, as provided in the SWM Manual, by averaging data from collections for a period of seven days, at multiple representative locations, in summer, winter and rainy seasons. Due to non-adoption of accurate population and failure to conduct survey, the quantity of solid waste projected in the SWM Plan was only 860 TPD during 2019, as against the figure of 1,000 TPD as reported to Audit and 1,100 TPD as reported to TNPCB.

Audit observed that in the absence of accurate estimation of the quantity of solid waste generated in the city, based on population and survey, the planning for SWM was unrealistic.

GoTN stated (November 2019) that necessary action to comply with SWM Manual in respect of assessment of waste generation was being taken.

3.2.2.2 Financial Management

The Central/State Sponsored Finance Commission Grants, grants released under Swachh Bharat Mission (SBM), Integrated Urban Development Mission (IUDM) and Smart City Mission (SCM) besides the ULBs General Fund are the sources of funds for CCMC to carry out capital and revenue expenditure for SWM activities. State Policy on SWM also emphasised a sound mechanism for collection of user fee to make SWM services financially sustainable.

Non-levy of SWM user charges on all waste generators

SWM Rule 4(3) read with Rule 15 (f) stipulates that user fee for SWM shall be levied and collected from all waste generators. The SWM bye-laws notified by CCMC in July 2017 specified SWM user charges (SUC) for different classes of waste generators with instruction that SUC should be remitted along with Property Tax (PT).

CCMC collected SUC of ₹ 95.62 lakh and ₹ 0.12 lakh as against ₹ 17.32 crore and ₹ 17.95 crore receivable for the year 2017-18 and 2018-19 respectively resulting in short-collection of ₹ 34.31 crore.

Audit scrutinised the system for collection of SUC and found several lacunae in the existing system which was impacting the collection.

As per data furnished (May 2019) by CCMC, the SUC collectable was based on the number of PT assessments. The SUC, as per CCMC's SWM Bye-laws, was to be collected from all waste generators based on waste generation. The PT assessment calculation takes into account only the usage[17] and area of the building, whereas SUC demand was to be raised and collected based on waste generation. For instance, Audit observed that CCMC did not levy SUC on 2,990 shops leased out by it. Considering the minimum notified rate of ₹ 150 per month per shop, the non-levy worked out to ₹ 89.70 lakh[18] from these properties for the period 2017-19. Further, though the bye-laws required remittance of SUC along with PT, the online facility of CCMC for payment of taxes did not have provision for remitting of SUC, resultantly the SUC was collected physically at collection centres. Thus there was no mechanism to monitor the progress of collection of SUC either from the property owners or waste generators.

GoTN accepted (November 2019) that non-collection of user fee had led to decline in revenue and stated that arrears in user fees would be collected in 10 installments from November 2019. It was further stated that suitable modifications would be made in the software to enable collection of SUC along with PT from the next financial year. Audit observed that non-levy of SUC on waste generators had resulted in non-collection of revenue of ₹ 89.70 lakh in respect of the shops leased out by CCMC.

3.2.3 Economy and efficiency of operations

3.2.3.1 Injudicious hiring of vehicles for transportation of solid waste

Availability of vehicles exclusively for SWM activities in CCMC during 2016-19, was as shown in **Table 3.5**.

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17 Residential, Industrial/Government building, Residential/Shops, Commercial/Shops, Residential & Hostel, Office, Lodge house/Cinema Theatre/Restaurant, Guest house, Office commercial and Star hotel.

18 2,990 shops x 20 months* x ₹ 150 = ₹ 89,70,000.
* From August 2017 (subsequent month to notification of Bye-law) to March 2019.

Table 3.5: Availability of vehicles in CCMC for SWM

Sl.No.	Type of vehicle and capacity	Number of vehicles
1	Dumper Placer (single and twin bins with total carrying capacity of 2 tonnes)	47
2	Compactor and Refuse Collector Compactor (carrying capacity varying from 2 to 3.5 tonnes)	62
3	Tipper Lorry (capacity ranging between 2 to 3 tonnes)	27
4	Smaller Tipper of 0.75 tonnes each	50
5	Tractor with Trailer (2 tonnes capacity each)	14
Total		**200**

(Source: Details furnished by CCMC)

Dumper placers transport solid waste from the waste storage bins/containers to the transfer stations[19] or the dump yard in six trips per day and the remaining vehicles two trips per day. These vehicles were off the road for 20 to 45 days per year, during 2016-19, on account of repair, maintenance and renewal of fitness certificate, etc. The total carrying capacity of the above vehicles was worked out by Audit as 1,044 TPD by taking into account (i) a maximum 'off the road' period of 45 days per year per vehicle, (ii) their minimum carrying capacity and (iii) the trips done per day. The average collection of solid waste by CCMC during 2016-19 ranged between 850 to 950 TPD. As such, the fleet of vehicles available with CCMC was adequate to transport the entire quantity of solid waste collected during this period. CCMC, however, hired 64 to 68 tipper lorries per day during this period, resulting in an expenditure of ₹ 43.24 crore, which was avoidable.

GoTN stated (November 2019) that CCMC's vehicles had a capacity to carry only 533 TPD and hiring of vehicles was necessitated on account of increase in the collection of solid waste. The reply was not acceptable as the actual average quantity of 533 TPD carried by the vehicles of CCMC was much lesser than the carrying capacity of CCMC's vehicles, which was adequate to carry the 850 to 950 TPD collected during 2016-19.

3.2.3.2 Collection and Segregation of solid waste

SWM Rule 4 (1)(a) read with Rule 15 (zg)(iv) stipulates that every waste generator is to segregate the waste generated by them in three separate streams *viz.*, bio-degradable, non-bio degradable and domestic hazardous wastes, prior to handing over to the authorised waste collectors. The local authorities shall create public awareness through information, education and communication campaign and educate waste generators on practicing segregation of waste at source. SWM Rule 22 also stipulates creation of necessary infrastructure for

[19] Facility created to receive solid waste from collection areas and transport in bulk in covered vehicles or containers to the Processing Plant.

enforcing waste generators to practice segregation of waste at source within a time frame of two years from the date of notification of SWM Rules.

3.2.3.3 Prevalence of manual handling of waste

SWM Rule 15 (zd) requires local bodies to ensure provision and usage of personal protective equipment (PPE) including uniform, fluorescent jacket, hand gloves, raincoats, appropriate foot wear and masks by the workers handling solid wastes. SWM Manual, prohibits manual handling of wastes. However, if unavoidable due to constraints, manual handling should be carried out with proper precaution with due care for health and safety of workers. It was, however, found during the JPV (June 2019) that the workers in 10 wards out of 25 wards were not wearing the fluorescent jackets, hand gloves and masks despite its supply to the workers (**Exhibit 3.1**). The usage of protective equipment by the regular as well as the outsourced sanitary workers was not ensured by CCMC. CCMC did not enforce the penalty clause on the contractors engaging outsourced workers for not using protective equipment. Failure in adhering to the safety guidelines put the workers at health risk.

Exhibit 3.1: Sanitary worker engaged in primary collection without protective gear

(Source: Joint physical verification)

GoTN stated that the sanitary workers were being imparted trainings by CCMC under Swatch Bharat Mission. However, apart from imparting trainings, CCMC should have ensured compulsory usage of PPEs by strict monitoring and enforcement of penalty clause.

3.2.3.4 Poor segregation of waste at source

Door-to-door collection of solid waste was carried out by the sanitary workers of CCMC and also through outsourcing. The sanitary workers were provided with a push cart with separate bins and dry waste collection bags for collecting bio-degradable and non-bio-degradable wastes (**Exhibit 3.2**). During JFV (June 2019), it was noticed that in all the 25 wards, only partial segregation was done by the households indicating that the community participation is substantially lacking even after the time frame of two years from notification of SWM Rules. Also, the sanitary workers segregated only the

Exhibit 3.2: Separate bins for primary collection

(Source: Joint physical verification)

dry wastes which were either handed over to the recyclers or taken to the ward office for final disposal.

3.2.3.5 Non-availability of separate bins at secondary collection points

Section 2.3.2 of SWM Manual, 2016 stipulates that at the secondary collection points, segregated waste must be stored on-site in separate covered bins or containers for further collection and be kept separate during all steps of waste collection, transportation, and processing. The JFV (May/June 2019) in 25 wards revealed that though separate containers were provided for primary collection, the secondary collection points had only single containers (**Exhibit 3.3**) resulting in mixed waste being transported to the dump yard. It was further noticed that segregation existed only in the case of waste supplied by the bulk refuse producers (i.e., hotels and market places) as their wastes were bio-degradable in nature and contributed to 10 *per cent* of the total solid waste generated. These were transported directly to the vermicomposting and bio-methanation facilities. Even after lapse of three years since notification of SWM Rules, 90 *per cent* of waste collected were being transferred to the transfer stations and dump yard as mixed waste.

Exhibit 3.3: Single bin at secondary collection point

(Source: Joint physical verification)

GoTN stated (November 2019) that cent *per cent* door to door collection and segregation of waste at source was since achieved to the maximum extent and transportation of mixed wastes was totally avoided by the usage of light commercial vehicles instead of push carts and organic waste storage bins. The reply was not tenable as the facts mentioned in the reply were not supported by any documentary evidence. Further, during JFV (June 2019), Audit found only partial segregation of wastes in all the 25 wards, which was contrary to the Government's reply.

3.2.3.6 Shortfall in processing of solid waste

SWM Rule 15 (v) envisages that bio-degradable waste be processed, treated and disposed of through suitable technologies *viz.*, composting, bio-methanation, waste to energy *etc*. Further, SWM Rule 15 (zj) read with (zk) stipulates that the local bodies shall take necessary actions to bio-mine or bio-remediate the dumpsites, wherever feasible, and in the absence of potential for bio-mining and bio-remediation of dumpsite, it shall be scientifically capped as per landfill capping norms to prevent further damage to the environment within a period of five years from the date of notification of the SWM Rules.

The average collection of solid waste by CCMC was 850, 900 and 950 TPD during the years 2016-17, 2017-18 and 2018-19 respectively. The processing facilities available in CCMC and their utilisation are given in **Table 3.6**.

Table 3.6: Capacity of processing plants and its utilisation

(In TPD)

Description of Plant	Capacity	Average solid waste supplied and processed		
		2016-17	2017-18	2018-19
Processing Plant under PPP mode[20]	525	217	288	414
Vermicompost Plant	100	67	44	48
Bio-methanation Plants (3 Nos.)	4	1	1	1
Total	**629**	**285**	**333**	**463**

(Source: Details furnished by CCMC)

It may be observed from the **Table 3.6** that as against the infrastructure created for processing of 629 TPD of solid waste, the quantity of waste supplied by CCMC ranged from 285 TPD to 463 TPD during 2016-19. Audit observed that this was a persistent issue and CCMC did not attempt a solution, but continued to hire lorries for transporting wastes directly to the dumping yard. GoTN replied (November 2019) that the capacity of the transfer stations was low, due to which the collected waste was taken directly to the dump yard rather than to the processing plant through the transfer stations. GoTN further stated that action was being taken to expand the capacity of transfer stations.

Exhibit 3.4:Chicken waste dumped in the open at the dump yard

(Source: Joint physical verification)

Further, Audit observed that the waste collected during 2016-19 included 7.52 TPD of chicken waste which was bio-degradable by nature. This should have been sent to the bio-methanation plants for processing, instead CCMC resorted to dumping the chicken waste in the dump yard (**Exhibit 3.4**).

(i) As per the Service Level Benchmarks notified by the Ministry of Urban Development (MoUD), GoI, 75 *per cent*, 77 *per cent* and 79 *per cent* of the collected waste are to be processed during the years 2016-17, 2017-18 and 2018-19 respectively. Against this target, the actual quantity of collected waste processed ranged from 34 to 49 *per cent* during 2016-19. In order to fill up the wide gap in processing, CCMC established (July 2019) infrastructure facilities for processing an additional 600 TPD of solid waste at a cost of ₹ 9.82 crore under SCM. However, as the contract for operation and maintenance of this facility was not finalised, the infrastructure created at a

[20] Though the installed capacity of the processing plant was 600 TPD, the handling capacity of transfer stations was only 525 TPD as only three transfer stations were established against the design for four, due to public protest against its creation at the identified site.

cost of ₹ 9.82 crore was yet to be put into use (November 2019). Thus, the CCMC, even after establishing an additional processing plant of 600 TPD at a cost of ₹ 9.82 crore, could not achieve service level benchmark notified by the MoUD, GoI. Poor achievement in processing of collected waste contributed to environmental degrading in the area surrounding the dumping yard, as commented in **Box-3.1** below.

(ii) Further, the accumulated legacy waste at the dump yard was estimated (2017) as 15.50 lakh cubic meter (cu.m.). The National Green Tribunal[21] (NGT), considering the adverse impact on the environment and the health of the people, directed (October 2018) CCMC to take appropriate measures to deal with the legacy waste. The NGT directed (October 2018) CCMC to take up bio-mining of the legacy waste in terms of SWM Rules, 2016, in lieu of cap up of legacy waste, by fixing a time frame of 12 months to complete the entire process. Audit observed that even though CCMC estimated the project of bio-mining the legacy waste at ₹ 99.11 crore under SCM, the project is yet to be approved (September 2019).

The short fall in processing has resulted in 5.91 lakh MT[22] of unprocessed mixed waste being accumulated in the dump yard during 2016-19 over and above the 15.50 lakh cu.m. of legacy waste. Thus, CCMC did not have a system in place to clear the legacy waste or contain the accumulation of waste due to shortfall in processing.

Box-3.1: Outcome of poor performance in processing of solid waste

As per a survey conducted (September 2018) by TNPCB, the quality of ground water in and around the dumping yard deteriorated. The total dissolved solids, chlorides, phenolic compounds, total hardness, lead, nickel and cadmium in the ground water were found to be higher than the prescribed standards. Further, the Ambient Air Quality was also poor in all the four places surveyed in Vellalore.

GoTN stated (November 2019) that action would be taken to find a permanent solution to the problem.

3.2.3.7 Non-compliance with SWM Rules for processing facilities

SWM Rule 15 (y) requires the local authorities to make an application for grant of authorisation for setting up waste processing, treatment or disposal facility, if the volume of waste exceeds five TPD including sanitary landfills from TNPCB. Such an application was required to be accompanied by proof of environmental clearance and consent for establishment.

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21 A special tribunal created under the National Green Tribunal Act, 2010 to handle expeditious disposal of cases pertaining to environmental issues.

22 2016-17: (850 - 285) MT x 365 days = 2.06 lakh MT; 2017-18: (900 - 333) MT x 365 days = 2.07 lakh MT; 2018-19: (950 - 463) MT x 365 days = 1.78 lakh MT; Total: (2.06 + 2.07 + 1.78) lakh MT = **5.91 lakh MT**.

(i) Audit observed that CCMC had not taken any action to apply for Consent to Operate under the Water (Prevention and Control of Pollution) Act, 1974, and the Air (Prevention and Control of Pollution) Act, 1981 for the existing processing facility engaged under PPP.

GoTN replied (November 2019) that concessionaire has submitted the application as per their obligation under concession agreement and orders from TNPCB was awaited. The reply is not tenable as SWM Rules places the responsibility with the local authorities and also the concession agreement too requires CCMC to provide necessary support to the concessionaire in securing applicable permits. This has not been ensured by CCMC.

(ii) The processing capacity of the Vermicomposting facility established by CCMC at Vellalore was 100 TPD. Audit observed that, even though the Vermicomposting plant exceeded five TPD, no action had been taken by CCMC to obtain the authorisation from TNPCB for operating the Vermicomposting plant.

GoTN stated (November 2019) that the plant was operated and maintained through an O&M contractor, who has taken necessary steps to apply for consent and authorisation from TNPCB. The reply is not tenable as only the O&M of the plant has been handed over to the contractor, the responsibility to ensure obtaining the necessary permits lies with CCMC.

3.2.4 Non-production of records to ensure compliance

Audit scrutiny of 23 files relating to purchase of bins for compactors and dumper placers during the period 2015-19 disclosed that General Stores of CCMC purchased 2,738 compactor and dumper placer bins of various capacities. Of this, 1,687 bins were received (July 2015 - January 2019) at zonal offices based on the indents of the respective Zonal Sanitary Inspectors as indicated in **Table 3.7**.

Table 3.7: Details of receipt and issue of bins

(In numbers)

Number of bins received and issued	Bins of sizes			
	0.30 MT	0.50 MT	1 MT	2 MT
Total receipt	*467*	*1,517*	*635*	*119*
Issued to:				
Central Zone	73	234	126	66
East Zone	18	312	8	2
North Zone	34	254	52	10
South Zone	42	128	74	8
West Zone	52	111	80	3
Total issued	*219*	*1,039*	*340*	*89*
Balance	**248**	**478**	**295**	**30**

(Source: Details furnished by CCMC)

Audit could not ascertain the status of the remaining 1,051 bins valued ₹ 5.29 crore[23] as the stock register maintained by the general store keeper was not produced to Audit despite repeated reminders.

GoTN stated (November 2019) that the stock registers could not be made available during Audit as the same were in the custody of zonal staff and it has since been kept ready for being produced to audit as and when required. It was further stated that all the bins purchased were duly entered in the stock register concerned and distributed to wards. In view of the reply, Audit re-visited (November 2019) CCMC and called for the records. In reply, CCMC stated (November 2019) that stock register pertaining to 18 files were misplaced and efforts were being taken to trace them.

3.2.5 Conclusion

CCMC underestimated the quantity of solid waste generated in the city due to incorrect adoption of population base. Further, failure to conduct proper survey added to the erroneous estimate of solid waste generation. The persistent issue of insufficient processing capacity, and the failure to achieve optimum utilisation of the available capacity, resulted in processing of only 49 *per cent* of the collected waste, against the targeted 79 *per cent*. Other issues that impacted the solid waste management activities of CCMC were (i) poor achievement in at-source segregation of solid waste, (ii) manual handling of garbage, (iii) non-adherence to safety protocols, (iv) violation of statutory provisions relating to control of water and air pollution, (v) failure to collect solid waste user charges, etc.

The matter was referred to Government in January 2020; reply has not been received (August 2020).

3.2.6 Recommendations

- CCMC should carryout proper estimation of solid waste generation in the city, in order to set accurate targets and assess performance
- Effective action should be taken for source segregation of municipal solid waste by creating public awareness and providing adequate number of garbage bins therefor.
- Action should be taken to meet MoUD's benchmark on the percentage of solid waste processed before disposal by enhancing processing capacity and improving capacity utilisation of existing plants.

[23] Value of 1,051 bins: ₹ 0.72 crore (248 bins x 0.29 lakh); ₹ 2.29 crore (478 bins x 0.48 lakh); ₹ 2 crore (295 bins x 0.68 lakh); ₹ 0.28 crore (30 bins x 0.95 lakh); **Total - ₹ 5.29 crore** (₹ 0.72 crore + ₹ 2.29 crore + ₹ 2.00 crore + 0.28 crore).

3.3 Fraudulent claims/payments

MUNICIPAL ADMINISTRATION AND WATER SUPPLY DEPARTMENT

NATHAM TOWN PANCHAYAT

3.3.1 Failure to disallow fraudulent claims made by contractor for construction of OHT

Failure of Natham Town Panchayat of Dindigul district to disallow fraudulent claims made by contractor resulted in payment of ₹ 4.12 lakh for non-existent borewell and RCC staircase.

With the aim of augmenting water supply for drinking and domestic purpose to the people of Kovilpatti Rajakulam Colony in Natham Town Panchayat (TP), the Director of Town Panchayat (DTP) accorded (March 2015) administrative sanction for ₹ 20 lakh for the work 'Drilling of 6" dia borewell and construction of one lakh litre capacity Over Head Tank (OHT) at Kovilpatti Rajakulam Colony in Natham TP' (Work). The source of funds for the work included ₹ 19 lakh from Infrastructure Gap Filling Fund 2014-15 and the balance from General Funds of the TP. The estimate for the Work which included drilling two bore wells with submersible motors (₹ 9.29 lakh), construction of OHT (₹ 7.96 lakh) and lump sum provision for pump room and contingencies (₹ 2.75 lakh) was technically sanctioned in March 2015. The Work, excluding the lump sum provisions, was awarded (May 2015) through tender for ₹ 16.82 lakh with six months period to complete. The Work was recorded (November 2015) as completed in the measurement books at a cost of ₹ 19.31 lakh (i.e., ₹ 16.42 lakh towards construction of OHT and ₹ 2.89 lakh towards drilling of borewell). The payment (November 2015) was, however, restricted to ₹ 19 lakh.

Scrutiny (February/April 2019) of records at Natham TP in Dindigul district covering the period 2014-18 revealed the following:

(a) Provision was made for drilling two bore wells along with allied works like submersible motors, PVC casing pipe and pipe connection arrangements and a pump room. The measurement book, however exhibited drilling of one borewell along with proportionate execution of allied works with no pump room at a cost of ₹ 2.89 lakh. A joint physical verification (March/April 2019) of the Work site by Audit and officials of Natham TP revealed that (i) borewell was not sunk at the site as arrangement was made to provide water under a combined water supply scheme implemented by Tamil Nadu Water Supply and Drainage Board. Despite that one borewell was included in the measurement book as a completed component. (ii) the OHT was defective with seepage of water and remained unutilised for more than three years (April 2019). The Executive Officer (EO), Natham TP accepted the audit finding that the borewell was not sunk and recovered (April 2019) a sum of ₹ 2.36 lakh[24] from the contractor at the instance of Audit.

[24] Payment of ₹ 0.53 lakh for the accessories of borewell pipe was not included in the amount recovered from the contractor.

Government, in its reply (November 2019) stated that the defects in the OHT was rectified and water supply commenced.

(b) The estimate included a RCC staircase at a cost of ₹ 1.75 lakh to reach the top of the OHT. The provision of RCC staircase was found mentioned in the measurement book as a completed component and payment was made therefore. Audit, however, found that only a MS ladder was actually provided and a bill was fraudulently prepared as if a RCC staircase was provided and paid for. The EO, Natham TP accepted (March 2020) the audit findings and agreed to recover ₹ 1.23 lakh, being the difference in the cost between the RCC staircase and MS ladder from the deposits of the contractor, who in the meantime has passed away.

Thus, Audit observed that the points discussed above established that the fraudulent claims preferred by the contractor were overlooked by the Assistant Engineer and Assistant Executive Engineer, Dindigul and the same were attested as genuine in the M-Book and EO, Natham TP paid the contractor's bill without even a rudimentary check.

Audit recommends a thorough investigation of the fraudulent claim and to institute disciplinary action on the officials involved.

3.4 Avoidable/Unfruitful expenditure

HEALTH AND FAMILY WELFARE AND SCHOOL EDUCATION DEPARTMENTS

3.4.1 Avoidable payment of electricity charges

Non-review of the contracted maximum demand requirement by six hospitals and Anna Centenary Library had resulted in an avoidable payment of electricity charges of ₹ 7.07 crore during 2016-19.

According to Tamil Nadu Electricity Supply Code, 2004, in addition to current consumption charges, High Tension (HT) power consumers are required to pay Demand Charges at the rates prescribed from time to time, on the maximum KVA demand[25] recorded in a month or 90 *per cent* of the contracted maximum demand (CMD), whichever was higher. Regulation 17(6) (ii) of the Tamil Nadu Electricity Supply Code permits the consumer to reduce the CMD after expiry of initial agreement period of one year[26]. The Code also permits increasing the connected load on payment of prescribed charges.

[25] Highest KVA demand recorded at any point of time during the billing period.

[26] One reduction of up to 50 *per cent* of the existing load is allowed free of charge in a year. Further reduction is allowed on payment of charges.

(i) Avoidable payment by hospitals

(a) During 2017-19, six Medical College Hospitals (MCHs) and 15 District Headquarters Hospitals (DHH) were audited. In three MCHs, the maximum demand reached was much lesser than the CMD, but Demand Charges were levied and paid at 90 *per cent* of CMD leading to avoidable payment of electricity charges as given in **Table 3.8**.

Table 3.8: Hospitals where maximum demand reached was much lesser than the CMD

Name of the Institution	Period	CMD	Highest maximum demand reached	Demand charges paid* (₹ in crore)	Estimated CMD requirement	Demand charges for reduced CMD** (₹ in crore)	Avoidable payment (₹ in crore)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8) (5-7)
Government Medical College Hospital, Omandurar Estate, Chennai	April 2016 to March 2019 (36 months)	3,500	981.00	3.97	1,100	1.25	2.72
Stanley Medical College Hospital, Chennai (consumer no. 1971)		882	341.20	1.00	400	0.45	0.55
Govt. Dental College Hospital, Chennai		375	202.40	0.43	240	0.27	0.16
Total							**3.43**

* at ₹ 350 per KVA for 90 *per cent* of CMD; ** 90 *per cent* of reduced CMD at ₹ 350/KVA

(Source: Departmental records)

Audit observed that

- Government Medical College Hospital, Omandurar Government Estate, Chennai, started functioning from 2015-16. The Medical College Hospital obtained (2015) a HT service connection with 3,500 KVA, combined for the college and hospital. As the buildings for the hospital block were not ready, the hospital was functioning from the nearby Government Kasturba Gandhi Hospital. Audit found that the maximum demand reached did not exceed 981 KVA against the CMD of 3,500 KVA. If the usage pattern was analysed, the CMD could have been reduced suitably. The Government Medical College, Omandurar Government Estate, however, did not initiate any action leading to continued payment of maximum demand charges at 90 *per cent* of the CMD of 3,500 KVA during 2016-19.

- The Stanley Medical College (SMC) Hospital, Chennai, acquired a new HT connection (consumer no. 1971) with a CMD of 882 KVA in September 2012 for commencement of Stem Cell Research unit. The Unit did not start full-fledged functioning due to issues with the establishment of clean room facility[27] for the Stem Cell Research unit. The highest maximum demand reached was only

[27] Clean room is a controlled environment room (essential for sensitive processes for certain medical or scientific research) where air and surface contamination is constantly monitored and strictly controlled.

341.20 KVA. The Stanley Medical College, however, failed to reduce the CMD and continued to pay maximum demand charges at 90 *per cent* of CMD during 2016-19.

- The Government Dental College Hospital (GDCH), Chennai, had a CMD of 375 KVA. Scrutiny of electricity charges paid during the period April 2016 to March 2019 revealed that the maximum demand ranged only between 119.20 KVA to 202.40 KVA. The GDCH, however, failed to reduce the CMD and continued to pay the maximum demand charges at 90 *per cent* of CMD during 2016-19.

(b) In three hospitals, the consumption exceeded the CMD and hence the hospitals paid penalty of ₹ 1.29 crore as given in **Table 3.9**.

Table 3.9: Cases where penalty was paid due to failure to increase CMD

Name of the Institution	Period	Permitted maximum demand	Maximum demand reached	Penalty paid* (₹ in crore)
Stanley Hospital (Consumer No.2298)	April 2016 to March 2019 (36 months)	130	273.60	0.24
Stanley Hospital (Consumer No.1068)		1,200	1,657.80	0.51
Govt. Royapettah Hospital		425	599.00	0.20
Tirunelveli Medical College Hospital	April 2017 to January 2019 (22 months)	500	841.60	0.34
Total				**1.29**

* Levied on the excess over CMD at double the applicable MD charges

(Source: Departmental records)

- Audit found that the maximum demand exceeded the CMD on all the months during 2016-19 in Stanley Hospital (consumer no. 2298), Tirunelveli Medical College Hospital and Government Royapettah Hospital. Similarly, in Stanley hospital (consumer no. 1068), the maximum demand exceeded the CMD in 32 out of 36 months during 2016-19. Failure to increase the CMD as per operational requirement had resulted in continued payment of penalty.

(c) In May 2014, GoTN upgraded Government headquarters hospital, Tiruvallur, from 232 beds to 370 beds and several new equipment were added. The hospital, however, continued with a Low Tension (LT) service connection. Due to increased load, the maximum demand overshot the sanctioned demand of 64 KW[28] and consequently, TANGEDCO levied penalty. The Joint Director of Health Service (JDHS), addressed DMRHS in July 2016 for converting the LT service connection to a HT service connection at an estimated cost of ₹ 99.50 lakh. The proposal was not followed up by JDHS. As a result, the hospital paid a penalty of ₹ 1.27 crore during April 2016 to March 2019.

[28] Increased to 112 KW in May 2017.

(ii) Avoidable payment by Anna Centenary Library

Similarly, Anna Centenary Library (ACL), functioning under the control of Director of Public Libraries (DPL), obtained a CMD of 2,600 KVA in September 2010 for its HT service connection. But, the maximum demand reached during September 2010 to March 2019 was only 1,476 KVA due to non-functioning/limited functioning of facilities such as lifts, chiller plant, auditorium etc. The Library, however, failed to reduce the CMD resulting in avoidable payment of maximum demand charges of ₹ 1.08 crore[29] during 2016-19.

Thus, failure to review the contracted maximum demand requirement by six hospitals and Anna Centenary Library had resulted in an avoidable payment of electricity charges and penalty of ₹ 7.07 crore during 2016-19.

In respect of the avoidable payment by ACL, Government stated (December 2019) that action was being taken to rectify the faulty air conditioners, chillers, lifts etc., and contended that once the repair works were completed, the CMD of 2,600 KVA would be fully utilised. The reply was not tenable as reduction and enhancement of CMD was allowed and ACL failed to initiate timely action to reduce the CMD.

Health and Family Welfare department did not furnish any reply (August 2020).

Audit recommends that Government may engage the Electrical Wing of PWD to conduct a comprehensive study of contracted maximum demand and actual maximum demand of all HT power connections of Government hospitals and other institutions so as to increase or decrease the CMD to the appropriate level.

HOME, PROHIBITION AND EXCISE DEPARTMENT

3.4.2 Unfruitful expenditure in installation of CCTV system

Lapses in contract management in the procurement of CCTV based traffic monitoring system resulted in unfruitful expenditure of ₹ 2.70 crore.

Chennai Traffic Police (CTP) proposed installation of CCTV based systems in 40 road junctions in Chennai city with facility to monitor and regulate the traffic from a central control room. GoTN earmarked ₹ 4.96 crore under World Bank (WB) funded Tamil Nadu Urban Development Programme-III (TNUDP III), for this project. The Additional Commissioner of police (Addl. CP), CTP awarded (January 2010) the contract to a firm for

[29] MD charges paid ₹ 2.95 crore; on possible reduction of CMD to 1,650 KVA - ₹ 1.87 crore (90 *per cent* of 1,650 x ₹ 350 x 36 months).

supply, installation, commissioning and maintenance of CCTV based computerised system, at a total cost of ₹ 3 crore. The WB refused (March 2010) funding for this project based on procedural irregularities. The GoTN in December 2010 sanctioned ₹ 3 crore to implement the project with State Government funds. The contractor started his work in January 2011, after a delay of one year. The project, however, was not commissioned till March 2019 due to various lapses in contract management as discussed below:

(a) According to Tamil Nadu Transparency in Tenders Rules, 2000, payments for supplies and services should ordinarily be effected only on completion of delivery, and if advance payment is to be made, sufficient reasons should be recorded by the procuring entity. It also provides that in the case of mobilisation advances for construction or supply and installation contracts, irrevocable bank guarantee should be obtained. As per the agreement signed (January 2010) with the successful bidder, the value of contract was ₹ 3 crore which included supply of equipment / components such as fixed day/night colour camera, video server, LCD monitor, etc., costing ₹ 1.87 crore and installation, connecting charges, Annual Maintenance Contract (AMC) etc., at a cost of ₹ 1.13 crore. The contractor supplied the store/components worth ₹ 1.87 crore in March 2011, which were kept in stock in the custody of CTP. Audit found that CTP paid 90 *per cent* of the contract value (₹ 2.70 crore) in April and December 2011, even as there was no provision in the tender document/agreement for making advance payment. CTP did not obtain any bank guarantee for making the advance payment, thereby exposing the Government money to the risk of loss and enabled the contractor to evade responsibility.

(b) Even as the project was in progress, in a complete deviation from the original proposal to install the CCTVs in 40 road junctions, the Addl. CP directed (December 2012) the Contractor to install all the CCTVs for enforcement of law and order at four locations in the city *viz*., at Marina Beach, Koyambedu Bus Stand, Elliot's Beach and Flower Bazaar. This direction, however, was withdrawn in March 2013 and the Contractor was asked to go ahead with the original proposal.

(c) In January 2010, the supplier provided a bank guarantee for ₹ 14.99 lakh, being five *per cent* of the contract value, towards securing with the performance obligations of the contractor under the agreement. This guarantee, originally valid up to 30 July 2013, was extended up to 30 April 2014 only. Thereafter CTP did not take any action for renewal of the bank guarantee and thereby lost an opportunity to make good at least a part of the loss sustained.

(d) After CTP's instructions (March 2013) to restart the work, the contractor did not start the work immediately, but demanded CTP to bear the cost of road cutting charges payable to Greater Chennai Corporation and the connectivity charges payable to internet service providers for networking the CCTVs. The Addl. CP considered it a frivolous demand to delay the work and sought (July 2013) for legal opinion on exercising the option to terminate the contract. The legal advisor, after perusing the agreement, opined that it

was the responsibility of the supplier to meet the cost of road cutting and connectivity charges and suggested that the contract can be terminated in view of the abnormal delay and the contractor can be prosecuted for criminal breach of trust. However, no action was taken against the contractor at this stage. The Addl. CP neither proceeded against the contractor for non-completion of the work within the stipulated time nor allowed reasonable written extension of time, the validity or otherwise of the contract therefore stood in question.

(e) The contractor eventually restarted the work and submitted a work completion report in June 2015 in respect of 38 road junctions and claimed to have demonstrated working of cameras in 36 of the 40 road junctions in August 2015. The work completion report was not accepted by CTP and the system was not commissioned. The contractor, however blamed (April 2017) CTP for the repeated hold ups, damages caused to cameras and cabling due to road works, and natural calamities such as the floods in December 2015 and the cyclone in November 2016, and expressed inability to revive the project. Further correspondence by CTP with the contractor did not evoke any positive response.

(f) The supplier was required to maintain a logbook to record the service visits made to various junctions. This should be in duplicate and one copy was to be shown to the purchaser on monthly basis (Clause 17 of the Agreement). However, neither the contractor maintained the logbook nor the CTP monitored the progress of works. Further, a proceedings on the review of progress of works was held between CTP and contractor on 3 June 2014, in compliance contractor had submitted completion report of 27 junctions on 12 June 2014 (after demo on 09 June 2014) but reason for non-taking over of 27 junctions was not on record. Similarly, the contractor submitted a work completion report in June 2015 in respect of 38 road junctions and claimed to have demonstrated working of cameras in 36 of the 40 road junctions in August 2015. The CTP instructed to form a technical team to inspect the cameras and other installation in June 2017 i.e. after two years. The CTP served a show cause notice after four years of contractor's claims for completion of works (38 junctions out of 40 junctions) and also filed a FIR for criminal breach of trust against the contractor in February 2019, which was quashed by the Honourable Madras High Court. Lack of proper documentation and system of monitoring exposed the CTP to the risk of being unable to pin the responsibility on the contractor.

Thus, lapses on the part of the CTP in contract management and monitoring, including, indecisiveness at critical junctures of project implementation had resulted in failure of the project. The CTP, while proceeding against the contractor for lapses on his part, did not enquire into or fix responsibility on his staff for releasing unsecured advance, and making 90 *per cent* payment, without bank guarantee, even before commencement of installation work. As a result, the entire expenditure of ₹ 2.70 crore became unfruitful.

The matter was referred to Government in July 2019; reply has not been received (August 2020).

Audit recommends that Government should ensure compliance with the provisions of The Tamil Nadu Transparency in Tenders Act 1998 in all procurements. Early action may be taken to retrieve and put to use the stores supplied under this contract.

MUNICIPAL ADMINISTRATION AND WATER SUPPLY DEPARTMENT

CHIDAMBARAM, JAYANKONDAM AND KODAIKANAL MUNICIPALITIES

3.4.3 Unfruitful expenditure due to non-utilisation of machinery

Non-utilisation of machinery procured for processing solid wastes in three municipalities resulted in unfruitful expenditure of ₹ 3.94 crore.

Municipal solid wastes, transported to the compost yard, are processed mechanically in Solid Waste Processing Plants (Plants) to segregate them into compostable, reusable and recyclable wastes. Audit conducted during 2018-20 disclosed unfruitful expenditure of ₹ 3.94 crore due to non-commissioning of machinery procured by three municipalities for the plants as discussed below.

During 2014-16, Chidambaram, Jayankondam and Kodaikanal Municipalities proposed to upgrade their Solid Waste Management facilities and administrative sanctions were accorded as in **Table 3.10**.

Table 3.10: Administrative sanction for Solid Waste Processing Plants

Municipality	Project components		Admini-strative sanction	Funding source
	Item	Estimated cost (₹ in crore)		
Chidambaram	Compost pad with Leachate collection system	0.67	January 2016 (CMA) December 2015 (RDMA Chengalpet)	SWM and SBM Fund
	Machinery of 50 TPD capacity	1.50		
	Compactor and tipper lorries for Solid Waste Management works	0.58		
	Compound wall, Control room etc.,	2.40		
Jayankondam	Pre-processing shed	3.21	January 2015 (CMA) December 2014 (RDMA Thanjavur)	Fourth State Finance Commission Grant and Municipal Fund
	Machinery of 20 TPD capacity	0.78		
	Compost yard	1.29		
	Compound wall, yard building, etc.,	3.88		
Kodaikanal	Machinery of 30 TPD capacity	1.10	January 2016 (CMA)	SWM, SBM and Municipal Fund
	Machinery shed	0.67		

TPD-Tonnes per Day; SWM-Solid Waste Management; SBM-Swachh Bharat Mission; CMA - Commissioner/ Director of Municipal Administration; RDMA-Regional Director of Municipal Administration

(Source: Records of Municipalities)

Audit found that the projects were not completed even as of March 2020.

(a) Chidambaram Municipality

The Municipality awarded the work through open tender for supply and erection of machinery (March 2016) at a contracted value of ₹ 1.50 crore. The contractor supplied the machinery in May 2017 and the Municipality paid ₹ 1.20 crore being 80 *per cent* of the value of the machinery supplied. The machinery was kept unutilised at the compost yard **(Exhibit 3.5)** for 28 months (October 2019). The civil works for erecting the machinery did not commence as the Municipality decided (October 2018) to carryout Bio-mining[30] at the identified site, which was a compost yard. Further, the Municipality decided to establish Micro Composting Centres at different places in the town for onsite composting. The work of Bio-mining was in progress as of May 2019 and on introduction of Micro Composting, there would be no need for the machinery already purchased. When the matter was referred in September 2019, Government replied (January 2020) that the machinery had been shifted to Erode City Municipal Corporation in December 2019 and the machinery would be utilised there. The Commissioner, Erode City Municipal Corporation, however, informed (March 2020) Audit that the machinery was kept in the dumping ground and installation would be done only after completion of the ongoing bio-mining work in the dumping ground. Thus, the machinery was dumped in open area at Chidambaram and Erode for nearly three years, without utilisation, and the objective of mechanised segregation of garbage was not achieved.

Exhibit 3.5: Machinery lying idle in open area

(Source: Joint physical verification)

(b) Jayankondam Municipality

The Municipality, through open tender, issued work orders for a 20 Tonnes per Day (TPD) plant to the contractors in June 2015 and September 2015 for a contracted value of ₹ 0.80 crore (machinery) and ₹ 2.62 crore (civil works) respectively. After awarding tender, the site was found to be an abandoned quarry. Therefore, to suit the field conditions, the Director of Municipal Administration revised (December 2015) the administrative sanction of the civil works to ₹ 3.21 crore. The machinery was supplied in October 2017. In the meantime, the public protested against establishment of the Plant in the

[30] Bio-mining is a technique to clean up the site that has been dumped with wastes.

selected site and based on a public interest litigation, the Green Tribunal ordered (May 2016) to make changes to the project design. The civil works were stopped after incurring an expenditure of ₹ 0.55 crore and in December 2018, the Municipality decided to scrap the project and go for micro composting of garbage. As of March 2020, the machinery was lying unutilised in the pump house premises of the Municipality for over two years.

Thus, poor planning and preparing estimates for the civil works without visiting the site necessitated revising the administrative sanction. The resultant delay and complete change of the scope of the project mid-way had resulted in the non utilisation of the machinery and the partially completed civil structures for installing the machinery (March 2020).

When the matter was referred in September 2019, Government replied (October 2019) that the construction of pre-processing shed, storage rooms could not be taken up due to public agitation and orders of the Green Tribunal. Government further stated that due to change in policy to establish Micro Compost Centres at various places in the Municipality and to establish Faecal Sludge Treatment Plant at the work site, it was decided to shift the machinery (January 2020) to Tirunelveli City Municipal Corporation. Audit found that the machinery was not shifted from Jayankondam Municipality as of March 2020. Thus the expenditure of ₹ 1.35 crore towards construction/ procurement of plant and machinery became unfruitful, and the objective of mechanised segregation of garbage was not achieved.

(c) Kodaikanal Municipality

Based on open tender, the Commissioner of the Municipality issued work orders for the plant to contractors in February 2016 and March 2016 for a contracted value of ₹ 1.15 crore (machinery) and ₹ 0.70 crore (shed). The civil works were completed in November 2017 at a total cost of ₹ 0.67 crore and the machinery was supplied between November 2016 and November 2017. The Municipality released a part payment of ₹ 0.72 crore towards the machinery (November 2017).

As of August 2019, the Municipality had not obtained electricity connection for the plant and hence the machinery was kept in the compost yard premises. Audit observed that the Municipality did not effectively pursue with Tamil Nadu Electricity Generation and Distribution Corporation (TANGEDCO) and the Forest Department for laying power lines through forested area for energising the plant. As a result, TANGEDCO provided three phase power connection to the plant only in December 2019, after a delay of over two years after completion of civil works and supply of machinery.

Government replied (January 2020) that the plant would be put into operation within two months. The fact however remains that non-synchronising the works for availing power connection with the civil and mechanical works due to poor planning, had resulted in the plant and machinery constructed/procured at a cost of ₹ 1.39 crore lying unutilised for more than two years.

Thus, improper planning leading to scrapping the project in two municipalities (Chidambaram and Jayankondam) and non-synchronising the work on obtaining power connection with machinery and civil work procurement (Kodaikanal municipality) resulted in machinery procured at a cost of ₹ 2.72 crore[31] in the three municipalities and civil works partially completed at a cost of ₹ 1.22 crore[32] in two municipalities (Kodaikanal and Jayankondam) not being put to use for over two years. Consequently, about 62 MT of solid waste generated per day by the three municipalities were dumped in the compost yards without processing, adding to environmental degradation.

Audit recommends concerted efforts for early and proper utilisation of the machinery.

SCHOOL EDUCATION DEPARTMENT

3.4.4 Avoidable expenditure in printing and re-printing of free textbooks

Failure of the Directorates of School Education and Elementary Education in verifying the correctness of claims preferred by Textbook Corporation and the failure of Director of School Education in detecting errors in the textbooks had resulted in an avoidable expenditure of ₹ 23.27 crore.

Government of Tamil Nadu, through the Department of School Education, implements the scheme of 'Free supply of textbooks' to all students studying in first to twelfth standard in Government and Government aided schools. The Director of Elementary Education[33] (DEE) and the Director of School Education[34] (DSE) are responsible for implementing this scheme in respect of students studying in schools under their jurisdiction. These textbooks are based on the curricula developed and books designed by the State Council of Educational Research and Training (SCERT) and DSE[35]. The Tamil Nadu Textbook and Educational Services Corporation (TNTBESC), an autonomous body under GoTN, is responsible for printing and distribution of textbooks, the cost of which is reimbursed by GoTN as per the modalities approved in 2010.

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31 Municipalities procured machinery: Chidambaram ₹ 1.20 crore, Jayankondam ₹ 0.80 crore and Kodaikanal ₹ 0.72 crore (total ₹ 2.72 crore).

32 Civil works: ₹ 0.55 crore + ₹ 0.67 crore = ₹ 1.22 crore.

33 For Elementary schools (1 to 5 Standards) and Middle schools (6 to 8 Standards).

34 For High schools (6 to 10 Standards) and Higher Secondary schools (6 to 12 Standards).

35 Curricula for class 11 and 12 were developed by DSE till 2017-18.

Scrutiny (2018-19) of records at DSE, DEE and TNTBESC revealed avoidable expenditure in printing of textbooks, as detailed in the following paragraphs.

(a) Arbitrary collection of handling charges on cost of paper by TNTBESC

The cost incurred by TNTBESC, together with an administrative charge at prescribed rates[36], towards printing and supplying textbooks is reimbursed by GoTN, through the DSE and the DEE.

- GoTN issued (December 2010) orders laying down the modalities for reimbursement of production cost[37] incurred by TNTBESC in printing the free textbooks, which *inter alia* includes the actual cost of paper. TNTBESC, however, while preferring claims for reimbursement of production cost, had been including an additional amount of five *per cent* on the cost of paper as handling charges, which was not a component of the production cost, as approved by GoTN. In its response to an audit query, TNTBESC could not justify the levy of handling charges but, on being pointed out by Audit, discontinued this levy in its subsequent claim (May 2019) in respect of the academic year 2019-20.

- DEE/DSE failed to verify the correctness of the claim submitted by TNTBESC. The claims were vetted and forwarded to GoTN for sanction without questioning the admissibility of the claim of handling charges. Based on financial sanction by GoTN, the claims were settled by DSE/DEE. The failure of DSE/DEE to verify the genuineness of the charges claimed for reimbursement resulted in an excess payment of ₹ 21.85 crore to TNTBESC during the period from 2016-17 to 2018-19, as tabulated in **Table 3.11**.

Table 3.11: Details of excess payment made to TNTBESC

Sl. No.	Year	Quantity of paper procured (in MT)	Actual cost of paper procured	Cost of paper claimed from GoTN	Excess amount claimed from GoTN as handling charges @ 5 *per cent* on paper cost
			(₹ in crore)		
1	2016-17	21,048.39	123.58	129.76	6.18
2	2017-18	22,251.43	137.94	144.84	6.90
3	2018-19	27,100.43	175.48	184.25	8.77
Total		**70,400.25**	**437.00**	**458.85**	**21.85**

(Source: Details furnished by DSE / DEE)

[36] As per GoTN's orders (December 2010), administrative charges was to be paid at five *per cent* of cost of free books. GoTN, however, did not pay any charges during 2016-19 as TNTBESC was financially sound through its commercial activities of selling textbooks to private run school students.

[37] Production cost is a consolidation of the following components (i) Actual cost of paper/board/kraft, (ii) Printing charges, (iii) Godown rent, (iv) Transport charges and (v) five *per cent* of cost of free books towards administrative expenses.

In the exit meeting held on 18 November 2019 and in the subsequent reply (November 2019), the Principal Secretary to Government, School Education Department stated that TNTBESC had inadvertently included handling charges in the cost of paper and assured that TNTBESC will remit the same into Government's account. Results of action taken are awaited (March 2020).

(b) Avoidable expenditure due to re-printing of free textbooks

In October 2014, DSE issued orders to TNTBESC for printing 1.36 crore copies of various textbooks for 11th and 12th standards. Based on the indent of DSE, TNTBESC printed the textbooks for all subjects.

Subsequently, in June 2015, DSE requested TNTBESC to urgently reprint and supply 6,36,900 copies[38] of textbooks in respect of two subjects for 11th and 12th standards. According to DSE, these reprints were necessitated due to certain 'conceptual errors' pointed out by the subject teachers in these books. Audit found that the 'conceptual errors' referred to by DSE were in the foreword and preface of all these books and in one to seven inner pages of these eight books. As requested by DSE, TNTBESC reprinted the corrected versions and claimed ₹ 1.42 crore as cost, which was paid in March 2016.

In the exit meeting held on 18 November 2019 and in the subsequent reply (November 2019), the Principal Secretary to Government, School Education Department stated that deleting the 'Foreword' and 'Preface' was a policy decision and hence reprinting of the textbooks was unavoidable. Further, it was pointed out that a system was put in place from 2017-18 for scrutiny of textbooks prior to printing to avoid errors.

The fact, however remained that DSE had not checked/reviewed the textbooks before ordering print/reprint.

Thus, the failure of DSE and DEE in verifying the correctness of claims preferred by TNTBESC and failure of DSE to detect 'errors' in the textbooks had resulted in an avoidable expenditure of ₹ 23.27 crore[39] to the state exchequer.

Audit recommends to institutionalise a fail-safe rigorous checking of text books before mass printing.

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38 **Class 11:** (1) History (Tamil-94,700 copies), (2) History (English-5,500 copies); (3) Indian Economy (Tamil-2,09,200 copies), and (4) Indian Economy (English-26,000 copies). **Class 12:** (5) History (Tamil-88,800 copies), (6) History (English-5,300 copies), (7) Economic Theory (Tamil-1,82,000 copies) and (8) Economic Theory (English-25,400 copies).

39 ₹ 21.85 crore + ₹ 1.42 crore.

3.4.5 Unfruitful expenditure on high tech systems of Anna Centenary Library

Lack of commitment on the part of Government and casual handling of expensive high tech systems of Anna Centenary Library by the Director of Public Libraries resulted in ₹ 7.98 crore spent on creating the assets, largely unfruitful.

The Anna Centenary Library (ACL), Chennai is a public library functioning under the control of the Director of Public Libraries (DPL). The library building was completed (September 2010) at a cost of ₹ 197.43 crore. An amount of ₹ 5.25 crore[40] was spent for the provision of electrical installation works, HVAC[41] works, Fire alarm system, Access control system, Integrated Building Management System (IBMS), etc., to adopt Green Building Concept[42] (GBC) and obtained Green Building certification (May 2010).

Scrutiny of records at DPL/ACL during September 2017, April 2018 and July 2019 revealed the following:

(i) Integrated building management system

IBMS (**Exhibit 3.6**), a part of GBC, helps in effective and efficient usage of various electro-mechanical systems through optimised energy usage by integration with chillers, lighting, UPS, DG sets, fire alarm system, lifts, electrical energy meters etc. The system was installed in ACL (October 2011), at a cost of ₹ 0.72 crore with a warranty period of one year. The Annual Maintenance Contract (AMC) was neither renewed after October 2012 due to scarcity of funds with Local Library Authority (replied in November 2019) nor were any recruitment made against sanctioned posts[43] for maintenance of high tech systems and building. Due to lack of maintenance, IBMS stopped functioning since February 2014.

Exhibit 3.6: Illustrative diagram of IBMS

The Honourable Madras High Court, in a public interest litigation directed DPL to maintain the library (August 2015). GoTN/DPL as a compliance to court direction, approached (January 2016) a contractor for revamping the

40 GoTN had sanctioned (October 2009) an amount of ₹ 6.03 crore for GBC.

41 Heating, Ventilation and Air-conditioning.

42 Green buildings are constructed and maintained as environment friendly buildings, through architectural design for water and energy efficiency.

43 14 posts including two Assistant Engineers (one each for Electrical and Civil) sanctioned for maintenance of the building (March 2010).

IBMS, who quoted ₹ 2.09 crore for the work. GoTN, however, did not proceed with same (April 2017) citing heavy expenditure.

Audit observed that GoTN incurred ₹ 5.25 crore on GBC, which included ₹ 0.72 crore on IBMS, on the premise that this expenditure could easily be recovered from the considerable savings from building maintenance expenditure during the next four to five years. Non-functioning of IBMS, however, had rendered the envisaged automatic control of HVAC, lighting, Fire alarm system etc., ineffective, defeating the very idea of GBC. Thus, the expenditure of ₹ 5.25 crore incurred on GBC became largely unfruitful.

(ii) Facade access system

An external Facade Access System (FAS) was installed and commissioned (September 2011) at a cost of ₹ 1.47 crore for cleaning of the glass facade of the building.

Audit found that the ACL could not put into use the FAS since its commissioning, in absence of dedicated trained staff for periodical facade cleaning. ACL neither entered into AMC for FAS with the supplier nor outsourced the maintenance of the facade cleaning services to any agency. Thus, the FAS installed at a cost of ₹ 1.47 crore, was rendered unusable (**Exhibit 3.7**) and the objective of the system remained unachieved.

GoTN replied (November 2019) that the FAS was functional till 2015 and stopped functioning in 2015 due to unprecedented heavy rains. The reply was untenable as the electrical connections, conduit pipes and cradle system installed on the terrace for movement of the trolley system were removed by some unauthorised persons in November 2011. ACL made an attempt for the first time in 2016 to utilise the FAS but could not use the system.

Exhibit 3.7:
Carriage of Facade Access System

Exhibit 3.8:
Fire fighting pumps and Control Board

(Source: Photographs by the Audit team)

(iii) Fire Fighting System (FFS)

The fire fighting panel and the fire fighting motors of the system are housed in the basement of the ACL building **(Exhibit 3.8)**. Overflowing of the sump inundated the basement of the building on 09 March 2012 and damaged the FFS. No action was taken to rectify the unserviceable system. In January 2016, DPL obtained a quotation for ₹ 1.92 crore to rectify FFS of ACL. No further action was taken as GoTN had not sanctioned the required funds.

Thus, the dysfunctional IBMS coupled with casual handling of its systems resulted in a liability of ₹ 1.92 crore, besides exposing the library users and assets to fire hazards. GoTN stated (November 2019) that the FFS was being operated manually since the IBMS had become non-functional. The reply was untenable as critical features of FFS like sensor-based sprinkler system were not designed for manual operation.

(iv) Lifts

A total of 10 lifts and two escalators were provided in ACL campus at a total cost of ₹ 2.60 crore with warranty period of one year from the date of completion.

Audit found that out of 10 lifts, the supplier handed over six lifts between August 2010 and August 2011. Two lifts were handed over in July 2016 after delay of six years from the date of installation, due to issues regarding payment, and two other lifts were not taken over as they were not in a working condition. The supplier declined to rectify the defects due to expiry of warranty period[44]. As of July 2019, only 4 out of 10 lifts were functioning. Other six lifts were unserviceable due to various factors like non-handover of lifts, prolonged idling and non-usage, seepage of water due to flood waters etc. The supplier quoted (June/July 2019) a total of ₹ 0.24 crore for repairing and reconditioning the six lifts. No decision was taken (as of December 2019) in the proposal to rectify the lifts.

Thus, delayed payment to supplier and non-maintenance of lifts had resulted in the six lifts installed at a cost of ₹ 1.26 crore (**Appendix 3.1**), becoming unusable; and repairing the lifts would lead to an avoidable additional expenditure of ₹ 0.24 crore. As a result, the amphitheater, located on the open terrace above the Auditorium Block of ACL became inaccessible due to non-functioning of both the lifts serving that facility. GoTN replied (November 2019) that action was being taken to bring the lifts to usage.

Thus, GoTN's lack of commitment to adequately address the maintenance issues of the expensive high tech facilities of ACL by signing AMC and providing adequate funds and manpower, coupled with the casual handling of systems by DPL/ACL had resulted in non-achievement of the objectives of GBC. Idling of library facilities such as lifts, amphitheatre, firefighting systems etc., and consequent unfruitful expenditure of ₹ 7.98 crore[45] on provision of the above infrastructure facilities, besides an additional liability of ₹ 2.16 crore[46] for repairing the FFS and lifts.

Audit recommends posting of adequate maintenance staff or outsourcing the maintenance works of all high tech systems of ACL after bringing them back to working condition.

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44 As per terms, the warranty was only for one year from the date of handing over or 18 months from the date of delivery of material.

45 GBC: ₹ 5.25 crore (+) FAS: ₹ 1.47 crore (+) Lifts: ₹ 1.26 crore.

46 Fire fighting system: ₹ 1.92 crore (+) Lifts: ₹ 0.24 crore.

SOCIAL WELFARE AND NUTRITIOUS MEAL PROGRAMME DEPARTMENT

3.4.6 Implementation of the scheme for Working Women Hostels

Deficient planning, hasty implementation, delays in land alienation and construction and non-provision of staff had resulted in non-functioning and partial functioning of Working Women Hostels and consequent avoidable expenditure of ₹ 0.98 crore and blocking of ₹ 2.09 crore in idle assets.

Social Welfare Department (SWD) of GoTN runs Government Working Women Hostels (WWHs) to provide safe shelter and food to the working women of lower and middle income groups. The GoTN, in October and December 2013, sanctioned 20 WWHs in addition to the existing eight WWHs, each with an intake capacity of 50, in 13 districts to benefit 1,000 working women. GoTN sanctioned ₹ 23.85 crore towards construction of hostel buildings (₹ 20.20 crore), other non-recurring expenditure (₹ 3.42 crore) and for hiring temporary rental accommodation (₹ 0.23 crore).

During 2018-19, 21 District Social Welfare Offices (DSO) were audited, which included all the 13 districts wherein these 20 new WWHs were located. Audit found that, as of July 2019, only 10 of the newly sanctioned hostels were functioning with an occupancy rate ranging from 10 to 56 *per cent*, two hostels[47] were functioning with zero occupancy and eight hostels closed down due to lack of patronage **(Appendix 3.2)**. The shortcomings on the part of the Director of Social Welfare (DSW) and GoTN are discussed below:

3.4.6.1 Deficient Planning

***Lack of planning for accommodation*:** Based on the announcement (May 2013) of the Honourable Chief Minister to establish 20 WWHs in 13 districts, DSW, proposed (May 2013) to GoTN to immediately establish the hostels by hiring rented premises, pending construction of own buildings. DSW proposed an expenditure of ₹ 20,000 per month towards hostel rent and the same was approved by GoTN. Audit observed that the space norm[48] for WWH is 124 square feet (sq.ft.) per inmate, which requires renting out a 6,000 sq. ft building to accommodate 50 inmates. The rental expenditure of ₹ 20,000 per month, approved by GoTN, was grossly inadequate and unrealistic to hire a suitable accommodation as the reasonable rent for a comparative building would be in the range of ₹ 1 lakh per month[49]. This led to either hiring of much smaller buildings or those at distant locations, so as to

47 Sivaganga (since 01 November 2017) and Tiruppur (since 2016-17).

48 Norms adopted by GoI under 'Scheme for working women hostels' was 124 sq.ft. and GoTN norm notified in 2015 was also 124 sq.ft. per inmate.

49 Arrived at by Audit by adopting PWD's method of calculating 'Reasonable Rent' for issuance of 'Rent Reasonableness Certificate'.

restrict the rental expenditure within the ceiling fixed by GoTN. All WWHs were declared open in June 2014 through video conferencing without regard to its suitability and financial viability. As a result of the deficient planning on hiring accommodation and hasty opening of WWHs, Audit found that:

- Out of the six WWHs sanctioned in Chennai, two buildings in Perambur and Selaiyur housed two hostels each and two other hostels were located in an isolated locality in a suburb[50]. All these hostels were closed down in January 2016 mainly due to non-availability of suitable buildings within the approved rental amount to accommodate 50 inmates.
- Two WWHs in Kancheepuram District were also opened in a single building at Okkiam Thoraipakkam[51], far away from the locations approved by GoTN. These hostels could accommodate only 32 women against the sanctioned intake of 100, due to space constraints.
- Despite a greater demand due to its proximity to an industrial estate, WWH, Tiruvallur could accommodate only 24 women. The District Social Welfare Officer (DSWO) stated (May 2019) that the rented building had space to accommodate only 24 cots.

***Starting WWHs without assessing demand*:** Private agencies operate large number of WWHs all over the State, which function on commercial basis. In the WWHs run by Government, accommodation is provided at nominal rent for women from low income group, who would otherwise find it difficult to obtain accommodation in private hostels due to higher rent. Audit, noticed that there was no system to assess the demand for low income group women in the city/town where the WWHs were sanctioned. Absence of location specific demand survey had resulted in closure/low occupancy of WWHs.

- The WWH at Sriperumbudur, opened in June 2014, was closed in July 2015 due to lack of patronage and the DSWO surrendered the allotted land. The DSWO attributed the availability of a SIPCOT[52] run WWH with a capacity to accommodate 600 women, for the lack of demand. Audit found that the SIPCOT run hostel at Sriperumbudur had an average occupancy rate of 46 *per cent* during 2016-19 and, therefore, it is observed that the proposal to start the WWH at Sriperumbudur lacked proper assessment of demand and supply in that area. In his reply (December 2019), the CSW stated that action was being taken to identify another site in the same district.

50 Vyasarpadi in Chennai district and Pallikaranai in Kancheepuram district.

51 Okkiam Thoraipakkam is 50 kms and 5 kms from Chengalpet and Sholinganallur respectively, the two places where the hostels were sanctioned.

52 A Public Sector Undertaking of GoTN - State Industries Promotion Corporation of Tamil Nadu Limited.

- In the industrial city of Tiruppur, land for construction of WWH was identified and construction was completed in the same survey number of Neruppericha1 village, in which a SIPCOT working women dormitory to accommodate 600 women was already being built. The WWH, built at a cost of ₹ 1.10 crore, is lying idle since its completion in March 2017 due to lack of demand.

3.4.6.2 Delays in land alienation and construction

GoTN instructed (October 2013) DSW to identify suitable land, in consultation with the District Collectors, for construction of hostels by Public Works Department (PWD). Nearly five years after the sanction, as of July 2019, (a) only four WWHs buildings were completed, (b) two WWHs were partially completed and awaited Revised Administrative Sanction (RAS) in respect of certain critical amenities[53] which were not provided in the initial sanction, (c) construction was under progress in two places, (d) administrative sanction was awaited in respect of six WWHs buildings, (e) land alienation/ identification process was incomplete in five places and (f) in one place the allotted land was surrendered. The status of construction of WWHs is detailed in **Appendix 3.3**.

- In Tiruppur, the hostel building completed and taken over in March 2017, was not commissioned even as of June 2019 as amenities like borewell and compound wall was not provided. A proposal for RAS for an additional sum of ₹ 15.80 lakh submitted by PWD was pending approval since February 2016.
- In Vellore, the hostel building structurally completed in March 2016, was not taken over by DSWO as electrical works, water supply arrangements, compound wall, etc., were incomplete pending approval of RAS for an additional sum of ₹ 32.36 lakh proposed in October 2018.

Availability of suitable buildings, being a critical requirement of WWH, Audit observed that the abnormal delays in land identification and construction also contributed to the closure and poor performance of WWH.

3.4.6.3 Non-provision of personnel

Government of India's scheme for WWH envisaged only a partial assistance for regular functioning of WWH, which were to be self-sustaining and run by individuals/bodies desirous of providing this service. GoTN, however, decided to run WWH as full-fledged Government institutions with four Government staff on regular time scale of pay and four others engaged on wages. The administrative model planned by GoTN involved substantial budgetary commitment in the form of salaries and wages.

Although, GoTN approved the proposal for 160 new posts for the 20 new WWHs, no recruitments were made. Pending recruitments, in September 2014, DSW directed to engage one Assistant Cook, one Watchman

[53] Compound wall, barbed wire fencing, pavement, fans, gate, water connection, etc.

and one *Thuppuravalar*[54] on consolidated pay. The regular post of Supervisor to head the hostels were not filled up. In January 2018, DSW proposed to GoTN to engage Supervisors on contractual basis. GoTN's orders on the subject was awaited (June 2019).

As of June 2019, shortage of manpower with reference to the sanctioned strength ranged from three to six in the ten functioning WWHs. The details of manpower, as of July 2019, are given in **Appendix 3.4**.

DSWOs of five[55] districts stated that non-appointment of supervisors and other regular staff in the hostels to instill orderliness and to efficiently run the hostel, was one of the reasons for the poor patronage for the hostels.

3.4.6.4 Violation of eligibility criteria

GoTN stipulated an income ceiling of ₹ 25,000 per month for women seeking admission in WWH in Chennai district and ₹ 15,000 per month for WWH in other districts. Audit in three[56] DSOs revealed that hostel accommodation was provided to women with income above the stipulated ceiling in violation of GoTN orders. DSWOs of five[57] districts attributed low income ceiling for the poor response for admission in WWHs and suggested increasing the ceiling. The DSW, while stating that most working women are in receipt of higher income than the ceiling, requested (November 2016) GoTN to issue orders to enhance the monthly income ceiling to ₹ 55,000 for Chennai District and ₹ 20,000 for other districts so that the scheme benefits will reach the needy.

Audit observed that the objective of the scheme was to provide subsidised accommodation to 'low and middle income group' working women and GoTN's policy did not allow subsidising hostel accommodation for well-to-do working women, who have plenty of private run hostels functioning on commercial basis. GoTN, however, had not yet reviewed the definition of 'low and middle income group' for the purpose of hostel admission.

Thus, the failure of GoTN and DSW to assess the actual demand in selection of districts, suitable sites for construction of hostels, complete the pending civil works, appoint staff against sanctioned posts resulted in non-functioning of 10 WWHs and poor functioning of 10 other WWHs.

As a consequence:

- GoTN incurred an avoidable expenditure of ₹ 0.98 crore on rental, salaries and wages in respect of closed / unoccupied hostels.
- ₹ 2.09 crore[58] was blocked for more than three years in two partially completed hostels awaiting RAS for additional amenities.

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54 Sanitary worker.

55 Coimbatore, Perambalur, Tiruppur, Tiruvallur and Villupuram.

56 Madurai, Tiruvallur and Villupuram.

57 Kancheepuram, Sivaganga, Tiruvallur, Vellore and Villupuram.

58 Tiruppur WWH: Construction - ₹ 1.09 crore; Vellore WWH: Construction - ₹ 0.97 crore and Electrical - ₹ 0.03 crore.

The matter was referred to Government in August 2019; reply has not been received (August 2020).

Audit recommends a review of the rental ceiling fixed for hiring buildings for WWHs and work out a cost effective alternative system for managing the hostels if it is not possible to fill up the posts sanctioned for management of these hostels.

3.5 Loss/Short collection of revenue

MUNICIPAL ADMINISTRATION AND WATER SUPPLY DEPARTMENT

THANJAVUR CITY MUNICIPAL CORPORATION

3.5.1 Loss of revenue on lease of bus entry fee collection

Failure to correctly assess the revenue potential had resulted in loss of revenue of ₹ 27.87 lakh to Thanjavur City Municipal Corporation from the lease of bus entry fee collection.

Article 243W read with Twelfth Schedule of the Constitution of India devolved 18 functions to the Urban Local Bodies (ULBs). Provision of public amenities like parking lots, bus stops and public conveniences was one among them. In Tamil Nadu, the predominant mode of motorised public transport is buses and accordingly the ULBs establish bus stands to handle large volume of passengers on a daily basis. Based on the location, level of services provided and critical infrastructure components created in the bus stands (*viz.*, number of bus bays, passenger waiting areas, public toilets, cloak rooms, rest rooms, canteen facilities, information desk, control rooms, etc.,), the Regional Transport Authority (RTA) categorises these bus stands after evaluating the infrastructure created by the ULBs. In order to meet the operational and maintenance expenditure of the bus stands, bus entry fees are paid by the buses accessing the bus stands. Government fixes the bus entry fees to be collected by each category of bus stands.

GoTN permitted ULBs to lease the right of collecting bus entry fees from the buses entering the bus stand on annual basis through competitive bidding. GoTN further allowed (May 2009) ULBs to extend the lease period up to three consecutive years with the consent of the lessees and on condition that the amount of annual lease for the ensuing year is increased by five *per cent* over the current year.

Audit scrutinised (September 2018 and May 2019) records relating to the lease of collecting bus entry fees at two bus stands *viz.*, New Bus Stand and Old Bus Stand of Thanjavur City Municipal Corporation (TCMC). The bus entry fee

per bus per day was fixed at ₹ 15 uniformly for both the bus stands. The revenue through the bus entry fee collection dropped drastically in 2014 as given in the **Table 3.12** and stayed in the same range for the next four years.

Table 3.12: Bus entry fee revenue of TCMC

Period*	Mode of collection	Revenue receipts (₹ in lakh)
2012-13	Through contractor	33.34
2013-14	Direct collection by TCMC	28.44**
2014-15	Through contractor	20.10
2015-16	Through contractor	21.58
2016-17	Through contractor	22.66
2017-18	Through contractor	22.60
2018-19	Through contractor	23.73

* From 2014-15 onwards, the period of reckoning was from August to July

** Actual collection of ₹ 37.65 lakh less collection charges of ₹ 9.21 lakh

(Source: Details furnished by TCMC)

The revenue which stood at ₹ 33.34 lakh in 2012-13 fell to ₹ 28.44 lakh in 2013-14 after TCMC started collecting the bus entry fee directly from bus operators. In July 2014, TCMC decided to lease out the bus entry fee collection citing difficulties in collection and awarded the lease for three year period from 1 August 2014 to 31 July 2017 to the highest of the two bidders who participated in the auction. The annual lease amount payable was fixed at ₹ 20.10 lakh for the first year, which was to be increased by five *per cent* in the following two years. In May 2017 TCMC called for fresh tenders for leasing bus entry fee collection for a further period of three years wherein, the same two bidders participated. TCMC awarded (July 2017) the lease to the same person, who was the highest bidder, for three more years at ₹ 22.60 lakh, ₹ 23.73 lakh and ₹ 24.92 lakh for the first, second and third consecutive years respectively. In accordance with the terms of lease, the lessee remitted the annual lease amount in advance i.e., before commencement of the lease period.

Audit observed that while calling for bids for leasing out the bus entry fee collection, TCMC did not fix any minimum bid value based on assessment of revenue potential. Scrutiny of records pertaining to 2017-19 revealed that 847 buses entered the bus stands daily (i.e., 595 buses in New Bus Stand and 252 buses in the Old Bus Stand), as reported by the Tamil Nadu State Transport Corporation (TNSTC). Based on the data furnished by TNSTC, the amount of collection of bus entry fees worked out to ₹ 92.75 lakh[59] for two years from August 2017 to July 2019 against which the amount realised from the lessee was ₹ 46.33 lakh. This resulted in TCMC sustaining a loss of

[59] Bus Entry Fee for two years from August 2017 to July 2019: 847 buses x ₹ 15 per bus per day x 365 days x 2 years = ₹ 92.75 lakh.

revenue of ₹ 27.87 lakh[60], arrived at after allowing a reasonable profit margin of 20 *per cent* to the lessee. Besides, TCMC would incur a loss of revenue of ₹ 12.18 lakh[61] for the third extended annual lease period i.e., from August 2019 to July 2020. Fixation of minimum bid value based on potential revenue coupled with an agreement incorporating suitable safeguards to protect government interests, would have enabled the government to realise higher revenue.

When brought to notice, the Additional Chief Secretary to Government (ACS), Municipal Administration and Water Supply (MAWS) Department, concurred (January 2020) with the Commissioner of TCMC to consider the feasibility of cancelling the current contract. ACS, MAWS Department further directed the Commissioner of TCMC to expedite the process of retender. The reply vindicated the audit observation of loss of revenue due to award of tender without fixing a minimum bid value based on the estimated number of buses utilising the bus stands. Further, the estimated loss of ₹ 27.87 lakh would not be made good by cancelling the lease.

Audit recommends that government may make it mandatory for local bodies to assess the income potential and fix minimum bid value while auctioning leasing of rights for collection of bus entry fee.

REVENUE AND DISASTER MANAGEMENT DEPARTMENT

3.5.2 Short collection of revenue due to non-revision of lease rent

Delay by Revenue authorities and Government in revising the lease rent as per RSO 24-A in respect of land leased to private industries had resulted in short collection of revenue of ₹ 8.56 crore.

Under the provisions of Revenue Standing Order 24-A (RSO 24-A), Government may grant temporary occupation of State's land to a company, association or society for a maximum period of 20 years. The lease rent for such lands granted to companies, associations etc., should be revised at the time of renewal of lease or once in three years, whichever was earlier. As per the orders (June 1998) of GoTN, lease rent was to be fixed at 14 *per cent* of the market value when the land is leased out for commercial purpose. As per RSO and Government Orders thereunder, the Commissioner of Land

[60] Loss of revenue: 80 *per cent* of ₹ 92.75 lakh which is ₹ 74.20 lakh - (₹ 22.60 lakh + ₹ 23.73 lakh) = ₹ 27.87 lakh.

[61] Loss of revenue for the current lease period (August 2019 to July 2020): 80 *per cent* of (847 buses x ₹ 15 per bus per day x 365 days) which is ₹ 37.10 lakh - ₹ 24.92 lakh = ₹ 12.18 lakh.

Administration (CLA) has powers to lease and renew leases of lands valuing up to ₹ 2 lakh, and the Government has powers to lease its land valued above ₹ 2 lakh. The process of leasing government land involves formal application to the District Collector, followed by ascertaining public objection, if any, by the Village Administrative Officer and field survey by the Tahsildar to fix market value of the land based on sale price of similarly placed lands in the vicinity. Based on the Report of the Tahsildar, the District Collector makes his recommendation to the CLA / GoTN for award of lease. For renewal of existing lease, the same process except formal application and ascertaining of public opinion, are to be carried out.

During 2018-19, 30 Taluk offices were audited and in five offices, Audit came across issues like short collection/non-collection of lease rent, non-resumption of leased land, etc., in respect of lands leased under RSO 24-A. One such case of land leased to private party with substantial money value scrutinised (December 2018 and January 2019) by Audit in the Revenue Department and Ponneri Taluk Office in Tiruvallur District revealed that lease rent for land leased to M/s. Zuari Cements Limited (ZCL) and M/s. India Cements Limited (ICL) were not revised after expiry of three years, as given in **Table 3.13**.

Table 3.13: Details of land leased out to ZCL and ICL

Sl. No.	Name of the Lessee	Purpose of lease	Extent of land (in acres)	Lease period		Due date for fixation of revised lease rent
				From	To	
1	Zuari Cement Limited	Cement Grinding unit	3.68	29-05-2007	28-05-2016	29-05-2010 29-05-2013 29-05-2016
2		Landscaping/ rest room for workers/ railway siding	3.35	14-03-2008	13-03-2017	14-03-2011 14-03-2014 14-03-2017
3		Railway siding	0.63	25-10-2011	24-10-2014	25-10-2014 25-10-2017
4	India Cements Limited	Railway siding	1.74	03-09-2010	02-09-2013	03-09-2013 03-09-2016

(Source: Details furnished by the Department)

The above leases were not renewed for five to nine years, but the lessees continued to hold the land by paying lease rent at old rates in respect of the land leased to ZCL and without paying any lease rent in respect of land leased to ICL (**Appendix 3.5**).

The lapses on the part of Revenue authorities and Government that resulted in the short collection of revenue of ₹ 8.56 crore are discussed below:

- The Tahsildar, Ponneri did not monitor the land leases leading to lapses in timely submission of proposal to Commissioner of Land Administration (CLA) for revision of lease rent. Proposals for revision of lease rent in respect of land at Sl. Nos.1 and 2 of

Table 3.13 were submitted only in September 2019 after being pointed out by Audit and the same were lying with CLA.

- In respect of land at Sl. No. 3 of **Table 3.13**, the proposal for revision of lease rent submitted by the Tahsildar, Ponneri in October 2014 was still under consideration by CLA and GoTN. GoTN in their reply (September 2019) did not explain the reasons for the delay in refixing the lease rent.
- Similarly, as of September 2019, the belated proposal (October 2017) of Tahsildar, Ponneri for renewal of lease in respect of Sl. No. 4 of **Table 3.13** was pending with GoTN for over two years. GoTN did not elaborate the reasons for long pendency of the proposals for refixing the lease rent payable by ICL.

Thus, failure of the Revenue authorities and Government to take timely action to revise the lease rent by extending lease period as per RSO 24-A resulted in short collection of revenue of ₹ 8.56 crore (**Appendix 3.5**).

The matter was referred to Government in June 2019; final reply has not been received (August 2020).

Audit recommends establishment of a suitable management information system to enable CLA to monitor periodical renewal of land leases.

3.6 Undue favour to contractor

MUNICIPAL ADMINISTRATION AND WATER SUPPLY DEPARTMENT

GREATER CHENNAI CORPORATION

3.6.1 Injudicious award of contracts

Injudicious analysis of tenders had resulted in undue benefit of ₹ 1.41 crore to contractors.

According to Para 2.7.1 of Engineering Manual for Urban Local Bodies[62], if the contractor offers a rate which is 25 *per cent* lesser or higher than the detailed estimate rate for any item of work, such a rate would be considered as an absurdly low or high rate respectively. The Engineer, on acceptance of such tenders, should ensure that in respect of absurdly high rate items, the agreed quantities are not exceeded and the absurdly low rate items are executed in full. The aforesaid provisions of the Engineering Manual would serve as an effective check against any pre-meditated attempt by contractors to bag a contract by quoting absurdly low rates for certain items of the works

[62] The Manual is applicable to all ULBs except GCC.

being tendered, and then abandoning such items at the execution stage in full or part. Further, as per Rule 14 (9) of TN Transparency in Tender Rules (TNTTR), 2000, the tender accepting authority shall be ordinarily permitted to vary the quantity finally ordered, only to the extent of 25 *per cent*, either way, of the requirement indicated in the tender documents. While the Engineering Manual for ULBs was not made applicable to Greater Chennai Corporation (GCC), TNTTR and the spirit behind the Engineering Manual were applicable to GCC tenders. Further, as per Para 2.7.3 of the Manual, if the tendered value exceed 10 *per cent* over and above the estimated value, the tender may be accepted only by a Committee headed by the Commissioner of Municipal Administration in respect of ULBs other than GCC. In respect of tenders by GCC, the Council has the powers to accept such tenders.

The maintenance and improvement of roads within the jurisdiction of GCC is carried out periodically from its capital fund and financial assistance from Metropolitan Infrastructure Development Fund and Tamil Nadu Urban Road Infrastructure Project. GCC grouped the roads (cement concrete/bituminous) to which improvements were to be carried out into packages comprising of series of roads and works were awarded to contractors through tenders for the packages.

During scrutiny of records (April-May 2017 and July-December 2018) of GCC, improvements to interior roads carried out during 2015-17 were test-checked in selected 6 out of the 21 packages. The details of packages test-checked are indicated in **Table 3.14**. The estimated cost of the test-checked packages varied from ₹ 2.59 crore to ₹ 10.04 crore. After shortlisting the contractors through e-tenders (October 2015/September 2016), GCC awarded (December 2015/December 2016) the works to contractors.

Table 3.14: Details of works under the selected packages

Sl. No.	Zone	Package No.	Number of roads		Value of work (₹ in crore)			Month and year of completion
			Agreed	Completed*	Estimated	Agreed	Completed	
1	5	03	41	41	5.00	5.51	5.50	April 2016
2	9	17	100	86	9.97	10.66	9.64	November 2016
3	12	35	24	24	2.59	2.74	2.30	March 2017
4	13	11	56	55	5.10	5.64	5.40	March 2016
5	13	20	96	84	10.04	11.07	7.41	September 2016
6	14	15	69	69	7.67	8.29	8.28	June 2016

* In package 11, 17 and 20, number of road works cancelled were 1, 14 and 15 road works respectively

(Source: GCC records)

Though all the works were completed, on record, within the agreed cost, scrutiny of completion reports of the respective works revealed the following:

(a) The contractors of five packages did not carry out 13 items of work such as raising or lowering of manhole, carting away surplus earth, providing poly-sulphide sealant in the expansion joints of concrete, etc., which were agreed to be carried out at absurdly low rates, of 65 to 99 *per cent* less than the estimate rate (**Appendix 3.6**).

(b) In the six packages sampled, the contractors only partially carried out (3 to 46 *per cent*) 13 items of work such as providing and laying quarry rubbish, providing M15 grade ready mix concrete, construction of inspection chamber, etc., which were agreed to be executed at absurdly low rates of 33 to 98 *per cent* below the estimate rate (**Appendix 3.7**).

(c) In two packages, in respect of two items of works *viz*., interlocking paver blocks and dummy joints of cement concrete slabs, agreed to be carried out at absurdly high rates (29 to 45 *per cent* more than the estimate rate), the quantity executed were in excess of the agreed quantities (**Appendix 3.8**).

Audit found that by accepting absurdly low rates, GCC facilitated award of contracts to bidders who would not have otherwise qualified for award of the contract. Instant cases are discussed below:

(i) In Package 3 for relaying of 41 interior roads in zone 5, two contractors took part in the tender. As the bid value of both the contractors was in excess of 20 *per cent* of the estimate, GCC invited the L1 bidder for negotiations. The L1 bidder reduced the bid for the component '*raising or lowering the manhole cover'* to ₹ 250 per item from his original bid of ₹ 1,500, which itself was much lower than the SoR rate of ₹ 2,495.45 per item. By this abnormal reduction, the total bid value was brought down to 8.32 *per cent* above estimate and thereafter the work was awarded to him. The contractor, however, did not execute even a single item of the component *'raising or lowering the manhole cover'*.

(ii) Similarly, Package 17 involving 86 road works comprised of 14 components. Against the estimate of ₹ 9.97 crore, the lone bidder who participated in the tender quoted ₹ 11.94 crore (19.76 *per cent* above estimate) which was reduced to ₹ 10.66 crore (6.92 *per cent* above estimate) through negotiation. The negotiated rates were abnormally lesser than the tendered rates by 50 to 99.12 *per cent* in respect of 10 items. The completion reports of the package revealed that in 62 out of the 86 completed roads, the contractor laid the roads by executing only two items of works, *viz*., laying ready mix concrete (RMC) M15/M30/M40 grade and a non-tendered item 'Dummy joints over cement concrete surface'. Seven components (**Appendix 3.6**), for which absurdly low rates were quoted, were not executed by the contractor. In the remaining 24 roads only three to five items of work were executed.

In the above instant cases the tender would not have been awarded but for the reduction of rates on certain items to absurdly lower rates during post-tender negotiation, which helped the contractor to bring down the total bid value within the permissible excess. It is pertinent to point out that Central Vigilance Commission's publication (2002) on 'Problem areas of Corruption in Construction' specifically mentions "Items for which contractor has quoted abnormally low rates are to be identified at the time of award of contract.

Execution of less quantity or substitution of such items result in undue advantage to the contractor".

The contractors of all sampled packages had followed a similar pattern of quoting absurdly low/high rates and GCC allowed short execution and/or excess execution of items of works, in excess of the allowable 25 *per cent* of the estimated quantity. This had resulted in allowing an undue advantage of ₹ 1.41 crore[63] to the contractors.

The Commissioner, GCC stated (November 2019) that short execution or excess execution of certain items of work were due to site conditions. The reply indicated that the estimates were prepared without taking into account the site conditions, which facilitated the contractors to quote abnormally low rates for items which were included in the estimates, but not required to be executed.

The foregoing observations clearly pointed to serious deficiencies in the process of making the estimates and award of contracts, making the whole process irrelevant and redundant. It resulted in undue benefit to the contractors of ₹ 1.41 crore in respect of 6 out of the 21 road work packages test-checked by Audit. Audit opined that fixing responsibility for these lapses would prevent recurrence of such deficiencies.

Audit recommends that the provisions of the Engineering Manual for Urban Local Bodies on the issue of 'absurdly low/high tendered rates' should be applied by GCC.

MAYILADUTHURAI MUNICIPALITY

3.6.2 Excess expenditure due to extension of contract

Inclusion of inadmissible component and acceptance of increased daily wage rates payable to outsourced sanitary workers, without authority, by Mayiladuthurai Municipality resulted in excess expenditure of ₹ 51.31 lakh.

Government of Tamil Nadu formulated (May 1998) guidelines for privatisation of municipal basic services[64] to the public. Based on the guidelines, the CMA directed (January 2012) all ULBs to obtain in-principle clearance before privatising such services and adopt Tamil Nadu Transparency in Tender Rules, 2000 for award of work.

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63 Undue advantage: ₹ 1.36 crore (Agreed value of non-executed items (**Appendices 3.6 and 3.7**)) + ₹ 0.05 crore (undue benefit on excess quantities executed (**Appendix 3.8**)).

64 (a) Primary Services *viz.*, solid waste management, street lights, maintenance of roads and bridges, water supply and sanitation (b) other services *viz.*, parks maintenance, shopping complexes maintenance, markets and public toilet facilities.

Audit scrutiny of records (June 2019) of Mayiladuthurai Municipality (Municipality) in Nagapattinam District for the period 2016-19 revealed that CMA accorded (December 2012) in-principle clearance to engage 81 numbers of sanitary workers for municipal solid waste management services on outsourced basis by inviting tenders. The approval also required the Municipality to determine the wages of outsourced workers on par with the daily wage rates[65] fixed by the District Collector and by including contributory payments like Employees' Provident Fund (EPF), Employees' State Insurance (ESI), life insurance, uniforms and safety equipments, administrative charges, etc., as applicable to such rates. The Municipal Council resolved (October 2014) to engage 60 sanitary workers at an estimated cost of ₹ 54 lakh per annum through an Outsourcing Agency (Agency) in seven wards for a period of one year. Accordingly, the Municipality invited tenders and awarded (November 2014) the work to an Agency for the period from December 2014 to November 2015 at ₹ 293.05 per worker per day. The agreed rate included the minimum wage of ₹ 200 per day per worker as notified by the District Collector, EPF (₹ 19.05), ESI (₹ 9.50), insurance (₹ 2.00), uniform & safety equipments (₹ 8.00), employee contribution for EPF and ESI (₹ 28.50), internal training (₹ 4.00) and administrative charges (₹ 22.00). As per agreement, extension of contract period was permissible for administrative reasons, at the same rates, for another three months[66]. The Municipality, however, extended the contract at different rates[67] for four consecutive years without inviting tenders on the plea that CMA had permitted for extension subject to increase of cost within 10 *per cent* of the estimate. The plea of the Municipality was not appropriate as the in-principle clearance of CMA did not discuss the issue of extension of contract and the Tamil Nadu Transparency in Tenders Act, 1998 does not allow such extension. The expenditure incurred during the extended period was ₹ 3.96 crore[68].

During the extended period, the Municipality allowed minimum daily wages as per the rates notified by the District Collector and EPF and ESI elements calculated thereon. Further, the Municipality allowed arbitrary increase of other components of the payment to the contractor, *viz*., (i) insurance charges increased from ₹ 2.00 to ₹ 10.00 per day per worker, (ii) charges towards uniform & safety equipments increased from ₹ 8.00 to ₹ 16.10, (iii) cost of internal training increased from ₹ 4.00 to ₹ 21.88 and (iv) administrative

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65 2014-15 - ₹ 200; 2015-16 - ₹ 220; 2016-17 - ₹ 230; 2017-18 - ₹ 270; 2018-19 - ₹ 300.

66 As per the terms of agreement, value of work during extended period should not exceed 25 *per cent* of the approved contract value.

67 Rates at which the contracts were extended: December 2015 to November 2016 - ₹ 322.02, December 2016 to November 2017 - ₹ 354.18 and December 2017 to November 2019 - ₹ 398.18.

68 Total expenditure of extended annual contracts: December 2015 to November 2016 - ₹ 0.94 crore; December 2016 to November 2017 - ₹ 1.02 crore; December 2017 to November 2018 - ₹ 1.28 crore; December 2018 to June 2019 - ₹ 0.72 crore; Total expenditure - ₹ 3.96 crore.

charges increased from ₹ 22.00 to ₹ 36.80. While the Municipality was legally bound to increase the minimum wages and the corresponding EPF and ESI subscription, Audit observed that the Municipality had no authority or rationale for accepting increased rates for insurance, uniform & safety equipments, internal training and administrative charges during the extended period. Thus, the Municipality incurred an excess expenditure of ₹ 45.42 lakh as given in **Table 3.15**.

Table 3.15: Excess expenditure incurred due to increase in rates

(₹ in lakh)

Year	No. of Total worker days	Insurance			Uniform & Safety equipment			IT			Administrative charges			Total Excess paid
		Amount paid[A]	Amount to be paid @ ₹ 2	Excess paid	Amount paid[B]	Amount to be paid @ ₹ 8	Excess paid	Amount paid[C]	Amount to be paid @ ₹ 4	Excess paid	Amount paid[D]	Amount to be paid @ ₹ 22	Excess paid	
December 2015-November 2016	29,170	2.92	0.58	2.34	5.83	2.33	3.50	2.51	1.17	1.34	10.21	6.42	3.79	10.97
December 2016-November 2017	28,820	1.33	0.58	0.75	4.64	2.31	2.33	7.03	1.15	5.88	10.61	6.34	4.27	13.23
December 2017-November 2018	32,093	1.48	0.64	0.84	5.17	2.57	2.60	7.02	1.28	5.74	11.49	7.06	4.43	13.61
December 2018-June 2019	17,958	0.83	0.36	0.47	2.89	1.44	1.45	3.93	0.72	3.21	6.43	3.95	2.48	7.61
Excess paid				**4.40**			**9.88**			**16.17**			**14.97**	**45.42**

A: At the rate of ₹ 10.00 during December 2015-November 2016 and at ₹ 4.60 during December 2016-June 2019

B: At the rate of ₹ 20.00 during December 2015-November 2016 and at ₹ 16.10 during December 2016-June 2019

C: At the rate of ₹ 8.62 during December 2015-November 2016, at ₹ 24.38 during December 2016 - November 2017 and at ₹ 21.88 during December 2017-June 2019

D: At the rate of ₹ 35.00 during December 2015-November 2016, at ₹ 36.80 during December 2016 - November 2017 and at ₹ 35.80 during December 2017-June 2019

(Source: Details furnished by Municipality)

Further scrutiny disclosed that the daily wage rate of ₹ 293.05 agreed for the initial contract period (December 2014 to November 2015) included ₹ 28.50 towards employee contribution on EPF and ESI. Acceptance and inclusion of this charge in the daily wages payable by the Municipality was not in order. The inadmissible payment made to the Agency on this account was ₹ 5.89 lakh[69]. It is pertinent to point out that while outsourcing similar services during 2016-19, three other test-checked ULBs[70] did not include 'internal training' and 'employee's contribution of ESI and EPF' in their agreements with contractors. Further, similarly placed Avadi Municipality which extended the contract beyond the agreement period did not allow increase in the rates.

Thus, the extension of contract on annual basis at different rates was in violation of the agreement conditions and the Tamil Nadu Transparency in Tenders Act, 1998. Besides, acceptance of rate consisting of inadmissible

69 Inadmissible payment - 20,676 (Total worker days during December 2014 to November 2015) x ₹ 28.50 = ₹ 5.89 lakh.

70 City Municipal Corporations of Madurai, Tirunelveli and Thoothukudi.

component and arbitrary acceptance of increased rates without any authority resulted in excess expenditure of ₹ 51.31 lakh[71].

On being pointed out, Government accepted (November 2019) that inclusion of ₹ 28.50 towards employee contribution of EPF and ESI in the daily labour rate of ₹ 293.05 for the period December 2014 to November 2015 was incorrect and that the excess payment of ₹ 5.89 lakh would be recovered from the contractor. Further, it was stated that the contract was renewed annually by limiting the increase in rate within 10 *per cent* with the approval of the Council and that the Commissioner had sought ratification of CMA for the extensions. The reply relating to extension of contract was not tenable as the Tamil Nadu Transparency in Tender Act, 1998 and the agreement signed with the contractor did not allow such extension. Further, the Council did not have any authority to overrule the provisions of the Act.

Audit recommends that CMA and Government may review the May 1998 guidelines for privatisation of municipal basic services, and frame comprehensive guidelines covering all elements of outsourcing contracts.

3.7 Blocking of funds/Idle investments

HEALTH AND FAMILY WELFARE DEPARTMENT

3.7.1 Injudicious and excessive procurement of drugs

RAMO, Madurai and DMRHS (ESI) did not follow the prescribed medicine indenting procedure, based on the number of patients, resulting in locking up of Government funds of ₹ 16.39 crore in the form of excess procured medicines.

The Employees' State Insurance Scheme[72] (ESIS) provides various benefits to Insured Persons[73] (IPs) and their families. Medical benefits under the scheme are provided through 10 ESI hospitals[74] (ESIH) and 216 ESI dispensaries (ESID) managed by the Director of Medical and Rural Health Services (DMRHS (ESIS)) (Directorate). The seven State run ESIHs are administered

71 Total avoidable expenditure = ₹ 45.42 lakh (expenditure on increased rates) + ₹ 5.89 lakh (expenditure on inadmissible component) = ₹ 51.31 lakh.

72 An integrated Social Security Scheme for the workers and their family members employed in factories and other establishments wherein 10 or more persons are employed.

73 Registered under ESI Act, 1948. The employees drawing a monthly salary up to ₹ 21,000 are eligible for enrolment in the ESIS.

74 Two hospitals (Chennai KK Nagar and Tirunelveli) are directly run by ESIC, New Delhi; Seven (Chennai Ayanavaram, Madurai, Sivakasi, Tiruchirappalli, Salem, Vellore and Hosur) are under DMRHS (ESIS) and One hospital (Coimbatore) under the Director of Medical Education.

by the Medical Superintendents (MS) and ESIDs are administered by four[75] Regional Administrative Medical Officers (RAMO). All the four regions have Central Medical Stores (CMS) to store and supply drugs to ESIDs under their jurisdiction. The expenditure in state run ESIHs and ESIDs are met by ESI Corporation (ESIC) and the GoTN in the ratio of 7:1.

Director General, ESIC, New Delhi periodically enters into Centralised Rate Contracts (CRC) for procurement and supply of medicines under ESIS. The ESIHs and ESIDs in the State source medicines from the firms with which ESIC has entered into CRC and also from Tamil Nadu Medical Services Corporation Limited (TNMSC), a PSU of GoTN. CRC procurements are made twice a year based on requirement and stock held.

During 2017-18, ESIDs and ESIHs had incurred a total expenditure of ₹ 305.25 crore on procurement of medicines through TNMSC, CRC and through local procurements. Out of which, RAMOs and ESIHs had procured medicines worth ₹ 140.64 crore under CRC 140[76]. The value of medicines supplied under CRC 140 to the RAMOs and ESIHs during 2017-18 and lying in stock as of March 2019, were as given in **Table 3.16**.

Table 3.16: Value of medicines supplied to RAMOs / ESIHs under CRC 140

Region	IPs as on 31-03-2017	Value of CRC 140 medicines (during 2017-18)				
		Consolidated indent	Supplied	Cost of medicine per IP	Stock available as on March 2019	
					Value	Percentage of drugs lying unutilised
		(₹ in crore)		(₹)		
Chennai	22,23,710	46.30	51.15	230	5.40	*10.56*
Coimbatore	7,59,280	8.70	13.74	181	2.60	*18.93*
Madurai	6,07,590	37.72	39.35	648	16.39	*41.66*
Salem	3,58,820	14.23	18.54	517	2.36	*12.74*
Total	**39,49,400**	**106.95**	**122.78**	**310**	**26.75**	***21.79***

(Source: Details furnished by the Directorate)

As seen from **Table 3.16** above, while the cost of medicines procured by ESIDs, per IP under CRC 140 during 2017-18, was ₹ 310 at the State level, it stood at ₹ 648 in Madurai Region. It was further noticed that as of March 2019, the Madurai Region held 61 *per cent* of the state wide unutilised stock out of CRC 140 procurement. These data pointed to abnormally higher procurement of medicines under CRC 140 by RAMO, Madurai during 2017-18.

[75] Chennai, Coimbatore, Madurai and Salem regions.

[76] Effective from 28-03-2017 to 27-03-2019. The indents were called for one year from 01-08-2017 to 31-07-2018.

Audit (July 2018) of procurements under CRC 140 at the Directorate and RAMO, Madurai revealed the following:

- Based on their assessment of past consumption, the Medical Officers (MO) of Madurai Region furnished their medicine requirement under CRC 140 to the RAMO, Madurai. The consolidated value of the medicines intended by all the 65 MOs of the Region was ₹ 14.46 crore. The RAMO, Madurai, however, increased the item-wise requirement to a total value of ₹ 37.72 crore. The 161 *per cent* increase in the medicine requirement, as worked out by the RAMO, was justified by him by projecting a possible growth of 33 *per cent* in the IP strength, i.e., from the existing 5,32,718 to 7,08,860[77]. Audit found that the projected growth in IP strength had no basis and the actual growth was much subdued at 14 *per cent*, i.e., from 5,32,718 to 6,07,590. Thus, primarily by making abnormally high projection of IP strength, the RAMO, Madurai hiked the value of medicine requirement from ₹ 14.46 crore to ₹ 37.72 crore.

- The First Level Specialist Committee (FLSC), functioning under the DMRHS (ESI), further increased the value of medicines marginally from ₹ 37.72 crore to ₹ 40.29 crore. The FLSC's decision was approved (September 2017) by the Drug Purchase Committee (DPC) headed by the Managing Director, TNMSC.

- The supply was split into two parts[78], with first supply to commence from October 2017 and the second supply from March 2018. DPC, while approving the procurement orders, had specifically instructed the Directorate that the second supply orders should be placed only after obtaining the utilisation report for the drugs supplied in the first supply. However, the Directorate without obtaining the utilisation report placed the second procurement order in March 2018.

- The RAMOs of Coimbatore and Salem requested the Directorate to stop the second supply of several medicines under CRC 140 as the quantity received through the first supply (October 2017) was not exhausted. The RAMO, Madurai, however, accepted the second supply without assessing the need vis-à-vis the stock availability.

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77 Estimated on account of upward revision of income ceiling ordered by ESIC for benefits under ESI scheme.

78 Value of first and second supply - ₹ 20.08 crore and ₹ 19.27 crore respectively.

- As a result of steep increase in the order quantity and placing second purchase order without waiting for utilisation of the stock already procured, as of March 2019, drugs worth ₹ 16.39 crore[79], i.e., 41 *per cent* of supply under CRC 140, were held in stock at CMS Madurai and 65 ESIDs under RAMO, Madurai.

- Further, test check of supply of 39 major drugs during 2017-18 in 26 of 65 ESIDs (40 *per cent*) (**Appendix 3.9**) by Audit revealed that medicines worth ₹ 2.84 crore were supplied to the test-checked ESIDs without any indent from them/in excess of their indent (**Appendix 3.10**).

Thus, violation of prescribed procedures for indenting medicines, by projecting abnormally high requirement of medicines based on an arbitrary increase in the number of patients and without ascertaining utilisation of the first supply, resulted in locking up of Government funds of ₹ 16.39 crore in the form of excess medicines procured by RAMO, Madurai and the Directorate.

In reply to the audit observations, GoTN, *inter alia*, stated (June 2020) that the Medical Stores Officer, CMS, Madurai failed to submit a consolidated indent in time and the RAMO, Madurai also did not consult the CMS before arriving at the final indent. Further, GoTN confirmed the Audit finding that RAMO, Madurai did not stop the second supply even as the first supply was not utilised and stated that for these failure Departmental action was under progress. GoTN, however, justified the decision of the First Level Specialist Committee in accepting the quantity indented by RAMO, Madurai, on the ground that this decision was based on the possible increase in IP numbers, increase in the per capita ceiling for drugs by ESI Corporation, etc. GoTN also maintained that there was no financial loss as most of the medicines were utilised as of June 2020. Audit could not accept that there was no financial loss as the excess procurement had resulted in blocking of ₹ 16.39 crore in the form of medicines for more than a year.

Audit recommends that Government should institute a detailed investigation of the lapses on the part of RAMO, Madurai.

[79] ₹ 3.86 crore at CMS and ₹ 12.53 crore at ESIDs.

3.7.2 Improper planning leading to idling of three multi-storeyed buildings at Rajiv Gandhi Government General Hospital

Improper planning and failure to assess the actual requirements by RGGGH and DME led to idling of three structurally completed multi-storeyed buildings constructed at a cost of ₹ 55.33 crore thereby depriving critical care to the needy patients.

With a view to create better facilities for the increasing number of patients visiting the Rajiv Gandhi Government General Hospital (RGGGH), GoTN, during 2015-16, accorded administrative and financial sanction for construction of four new multi-storeyed buildings at an estimated cost of ₹ 124.48 crore. Although, the civil works of three buildings were completed between February 2017 and June 2018 (**Appendix 3.11**), the buildings were not commissioned (March 2020) due to non-completion of electrical works due to delay in Revised Administrative Sanction (RAS). Civil work in respect of the fourth building was in progress.

The status of the buildings as of December 2019 was as given in **Table 3.17**.

Table 3.17: Status of multi-storeyed buildings sanctioned for RGGGH

Name of the Block	Date of sanction & Estimate amount in ₹	Scheduled date for completion	Date of completion of civil works and expenditure in ₹	Date of request for RAS and additional amount sought in ₹	Date of RAS Sanction
Rheumatology	10-04-2015/ 19.65 crore	July 2017	February 2017/ 16.37 crore	February 2018/ 3.47 crore	August 2019
Nephrology and Urology	03-09-2015/ 29.48 crore	August 2017	March 2017/ 24.24 crore	July 2018/ 5.47 crore	August 2019
Hepatology	12-02-2016/ 16.70 crore	August 2017	June 2018/ 14.72 crore	June 2018/ 5.03 crore	August 2019
Out Patient	12-03-2015/ 58.65 crore	June 2019	In progress	Not applicable	

(Source: Details collected from RGGGH)

The reasons for non-commissioning of the three structurally completed buildings are discussed below:

- The Health Minister during a site visit (November 2016), instructed the Dean, RGGGH to increase the existing bed strength of Rheumatology ward from 50 to 100 and to provide additional air-conditioning (AC) facilities. The proposed expansion of the just completed Rheumatology building warranted additional construction. The Dean, RGGGH and PWD took more than one year to submit the RAS to the Government.
- The new block for Nephrology and Urology departments, originally did not have provision for centralised air-conditioning.

The Directors of Nephrology and Urology departments (March 2017) requested for AC facilities for several units of the new building. This necessitated a proposal for construction of a separate electrical sub-station to handle the electrical load and related electrical works. PWD took more than a year to seek the required additional funds through RAS.

- Similarly, the Head of the Department (HoD) of Hepatology also requested (December 2017) additional AC facilities in the under construction building. The additional features requested by the HoD warranted additional electrical works and extension of medical gas line facilities which were not provided for in the original estimates. Based on the new demand, PWD sought for RAS in June 2018.

- GoTN returned (October 2018) all the three RAS proposals with direction to bring down the estimate by obtaining a common new HT service connection for the three buildings. Director of Medical Education (DME), however, submitted (January 2019) a detailed report to GoTN stating that clubbing would be uneconomical and provision of power supply transformers to individual multi-storeyed buildings would be more advantageous to the functioning of the hospital. GoTN accepting the justification furnished by DME and accorded (August 2019) RAS to all the three proposals. The abnormal delay of 14 to 18 months in according RAS also contributed to the delay in completion of all the three blocks.

Audit observed that the plan/drawings of the three buildings were vetted by the Dean, RGGGH prior to formal sanction. The Dean, RGGGH admitted (January 2018) in his letter to PWD that air-conditioning for compulsory areas was left out in the original plans. Further, the original estimate did not provide for uninterrupted power supply for critical facilities in Nephrology and Urology block. These lapses proved that the Dean and DME did not comprehensively assess the facilities required for the buildings at the planning stage, which necessitated initiation of RAS proposals resulting in idling of newly constructed multi-storeyed buildings for periods ranging from 22 months to 37 months (as of March 2020), for want of electrical supply.

The avoidable delay in commissioning of the above buildings, besides causing idling of the infrastructure, had impacted service delivery by the prestigious hospital in the following manner.

- The Nephrology department received (2018) 15 new Haemodialysis machines for installation at the new block. The delay in the commissioning of Nephrology block had consequently resulted in delay in installation of these new dialysis machines thereby depriving the much sought after life saving procedure to needy patients with renal diseases.

- The new Hepatology block, *inter alia*, was conceived to strengthen the 'Liver Transplant Unit'. Delay in commissioning of the Hepatology building, due to non-provision of power connection, had resulted in non-delivery of liver transplantation services to the needy patients despite availability of necessary expertise.
- A Viral Research and Diagnostic Laboratory (VRDL), sanctioned in 2013 under a Centrally sponsored scheme, which was to be housed in the sixth floor of the Hepatology block, is still not operational due to non-provision of power connection, despite sanction of ₹ 1.74 crore in November 2016.

Thus, the failure to assess the actual floor space and power supply requirements by RGGGH and DME during the conceptual stage itself, led to idling of these structurally completed multi-storeyed buildings constructed at a cost of ₹ 55.33 crore[80] for more than four years, and resulted in deprivation of critical care to the needy patients. The Dean, RGGGH did not explore the possibility of using these buildings pending provision of additional facilities.

Audit recommends that the HoDs should exercise due diligence while vetting building plans prepared by PWD. Early action may be taken to complete the pending works to put the building to use.

HOME, PROHIBITION & EXCISE AND REVENUE & DISASTER MANAGEMENT DEPARTMENTS

3.7.3 Money kept outside the Government account

In violation of codal provisions and State Disaster Response Fund guidelines, Fire and Rescue Service Department withdrew the money from State Disaster Response Fund without any need forecast, leading to blocking of ₹ 24.96 crore in saving bank account and consequent loss of interest of ₹ 1.24 crore.

Based on the recommendations of the Thirteenth Finance Commission, State Disaster Response Fund (SDRF) was constituted for meeting the expenditure towards provision of immediate relief to the victims of natural disasters such as cyclone, drought, earthquake, fire, flood, tsunami, etc. Both GoI and GoTN provide funds to SDRF for meeting disaster relief expenditure. As per SDRF guidelines, accretions under SDRF should be invested in Central Government Dated Securities, Auctioned Treasury Bills, etc.

[80] Rheumatology block - ₹ 16.37 crore, Nephrology and Urology block - ₹ 24.24 crore, Hepatology block - ₹ 14.72 crore.

During 2016-19, an amount of ₹ 2,247 crore[81] was credited to the Fund. The SDRF guidelines provide that 10 *per cent* of the annual allocation could be utilised towards procurement of rescue and evacuation equipment. Every year, under this provision, GoTN sanctions funds to Director of Fire and Rescue Services (DFRS) towards procurement of various rescue and evacuation equipment. Although the entire amount credited to the Fund was shown as utilised at the end of the each year, test check of records of Revenue and Disaster Management Department and DFRS during 2018-19 disclosed that unspent balances out of the amounts sanctioned for procurement of equipments were kept in savings bank account as discussed below.

Based on the proposal of DFRS and recommendation of Commissioner of Revenue Administration (CRA), during 2016-19 GoTN sanctioned ₹ 30.61 crore and authorised DFRS to draw the funds in lump sums from Government accounts towards purchase of rescue and evacuation equipment. The amount was withdrawn without any assessment of immediate need for the money and deposited in the savings bank account of DFRS as detailed in **Table 3.18**.

Table 3.18: Details of amount sanctioned, withdrawn and expenditure

Year	Amount sanctioned (₹ in crore)	Month of sanction	Month of drawal	Purpose of sanction	Expenditure till June 2019 (₹ in crore)	Unspent balance as of March 2019 (₹ in crore)
2016-17	7.12	November 2016	March 2017	Purchase of rescue boats, power saw, emergency lighting system, etc.	3.80	3.32
2017-18	17.99	October 2017	March 2018	Purchase of Aerial Ladder, water bowzer, etc.	1.26	16.73
2018-19	5.50	September 2018	November 2018	Purchase of Robotic fire fighter, troop carrier, etc.	0.59	4.91
Total	**30.61**				**5.65**	**24.96**

(Source: Details furnished by the Department)

According to Rule 178 of Tamil Nadu Budget Manual (TNBM), it is irregular to draw money from Treasury without immediate requirement. Audit observed that in all the three years, in violation of Rule 178 of the TNBM, DFRS drew money without immediate need. An analysis of the reasons for blocking up of the sum of ₹ 24.96 crore in bank account disclosed the following:

[81] 2016-17: ₹ 713 crore; 2017-18: ₹ 748 crore and 2018-19: ₹ 786 crore.

(i) Procurement process was not completed as of March 2019 in respect of equipment[82] worth ₹ 4.92 crore sanctioned in November 2016 (₹ 2.91 crore) and September 2018 (₹ 2.01 crore).

(ii) Dropping of procurement of items due to its technical incompatibility. ₹ 1.94 crore sanctioned in September 2018 for a robotic fire fighter was drawn in November 2018, but the procurement proposal was dropped in the same month citing unsuitability of the proposed equipment.

(iii) Non-finalisation of tenders received for procurement of gas detectors and smoke exhausters sanctioned in October 2017 at a cost of ₹ 0.90 crore.

(iv) Savings of ₹ 2.05 crore that occurred in the procurements already done, which indicated excess estimation for sanction and drawal of funds.

(v) ₹ 12.30 crore sanctioned in October 2017 for two aerial ladders was not utilised as DFRS found that the sanctioned amount was insufficient and the entire amount refunded. Further, purchase orders were placed and supply was awaited in respect of four water bowzers and five victim location units at a total cost of ₹ 2.85 crore.

The above analysis established that money was drawn without any immediate need and kept in bank account. The balance held in savings bank account of DFRS earned interest at four *per cent* per annum as against 7.82 *per cent*[83] per annum earned by Government in respect of investment in Government Securities. This resulted in estimated loss of revenue of ₹ 1.24 crore[84] (**Appendix 3.12**).

Thus, due to drawal of funds by DFRS in violation of codal provisions and the failure of CRA in ensuring financial propriety, Government funds of ₹ 24.96 crore was lying in bank account for various period ranging up to 30 months, leading to an estimated loss of revenue of ₹ 1.24 crore.

On being pointed out, DFRS surrendered a portion of the unspent amount and replied (December 2019) that out of ₹ 30.61 crore drawn from SDRF, ₹ 10.44 crore had been utilised and ₹ 14.24 crore surrendered. It was also stated that ₹ 2.07 crore would be surrendered and ₹ 3.86 crore would be retained towards procurement of certain items for which tender were under evaluation/under process. DFRS, further stated that in future, amount would be drawn in a phased manner based on needs. The reply did not address the root cause of the issue, which is a systemic failure in SDRF fund management which facilitated DFRS to draw money without any immediate need.

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82 Such as inflatable boats, onboard motors, power saw, troop carrier, submersible water pump, etc.

83 Denotes the average interest rate of investments made during 2017-18.

84 Calculated based on the difference in interest rate between SB account and dated securities of Government.

The matter was referred to Government in August 2019; reply has not been received (August 2020).

Audit recommends immediate stoppage of the practice of drawal of funds, far in advance of requirement, and keeping such funds idle in bank accounts.

3.8 Regularity issues and others

SOCIAL WELFARE AND NUTRITIOUS MEAL PROGRAMME DEPARTMENT

3.8.1 Encroachment of Government land

Failure of Director of Social Welfare to secure the land allotted by Government and initiate immediate legal action to evict the encroachment had resulted in continued encroachment of land worth ₹ 2.27 crore.

In order to ensure an equitable distribution of lands in various urban agglomerations in Tamil Nadu and to sub serve the common good, GoTN, under Tamil Nadu Urban Land (Ceiling & Regulation) Act, 1978 (Act)[85], acquired vacant lands which were in excess of the ceiling limit[86], from the land owners. Out of such lands in Chennai agglomeration, GoTN allotted (August 1982) two parcels of land[87] to the Social Welfare Department (SWD) in Velachery and Egmore villages for construction of two Working Women Hostels (WWHs). Due to unexplained administrative delays on the part of SWD, these lands were taken possession only in March 1994. Audit could not ascertain the reasons for the abnormal delay as the connected files were reportedly lost in a fire accident that took place in January 2012.

Perusal of records at the Commissionerate of Social Welfare (CSW) revealed that SWD did not take any action to construct WWHs or to secure the lands by providing peripheral wall. The District Social Welfare Officer, Chennai, during site inspection (June 2008) at Velachery, found that the land was encroached by a private individual. As seen from available records, DSWO addressed the territorial Tahsildar only in August 2014, seeking a report on the encroachment in Velachery land and to demarcate it with fresh boundary stones[88] for construction of WWH.

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85 The Act was repealed in 1999 by Tamil Nadu Urban Land (Ceiling and Regulation) Repeal Act, 1999.

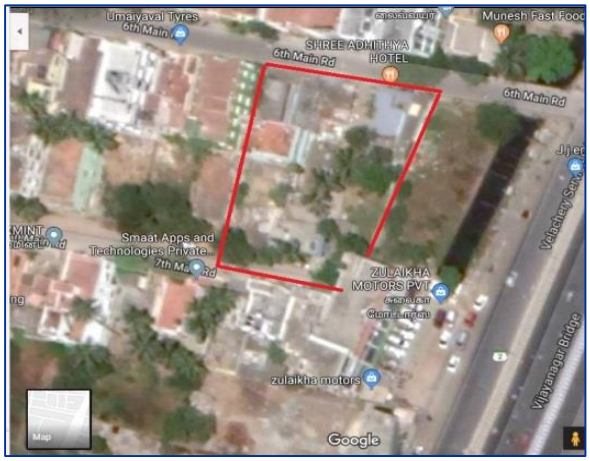
86 Under the Act, the maximum ceiling for holding vacant land within Chennai city limits was 500 sq. m. and 2,000 sq. m. for individuals and families respectively.

87 Three grounds (699 sq. m.) at Velachery and two grounds (446 sq. m.) at Egmore.

88 Reminders were sent in March and April 2015.

The Tahsildar of Velachery Taluk[89], while furnishing a field map sketch and an extract of Town survey register, stated (August 2015) that the land was encroached with few shops and a house. The Registration Department, after scrutinising the Encumbrance Certificate of Survey No. 339/1A since 1994, stated (April 2018) that three[90] sale deeds have been registered at Velachery Sub-Registrar's office. The head of the Registration Department also stated that there was no provision in the Registration law to cancel the sale deeds. SWD sought (June 2018) permission from GoTN to initiate judicial proceedings to retrieve the land. CSW also passed orders (July 2018) directing DSWO to file a First Information Report (FIR) regarding encroachment and to install a signboard at the location mentioning that the ownership of the land is with the SWD.

Exhibit 3.9: Encroached land *



* Area marked in red is encroached land.

(Source: Photograph and site map based on physical inspection by Audit team)

Audit observed the following:

- SWD did not take any action for 25 years, either to construct a WWH or peripheral walls to secure the land. This facilitated encroachment of the land in 2008.
- The CSW failed to act immediately on the June 2008 Inspection report of the DSWO. No explanation was on record for the inaction on the part of CSW.
- Tahsildar, Velachery failed to initiate action under the TNLA Act to evict the encroachment. Instead, CSW addressed GoTN seeking permission to initiate legal action even though such permission was unwarranted and the Tahsildar had the powers to proceed against the encroachers. Further, the Sub-registrar, Velachery, while registering three sale deeds, failed to adhere to the existing provisions relating to verification of genuineness of details in the sale documents presented for registration in order to prevent fraudulent registration of government lands.

89 Upon bifurcation of Taluks in Chennai in February 2014, the encroached site came under the jurisdiction of the newly created Velachery Taluk.

90 3648/2010 (July 2010), 1807/2011 (March 2011) and 4289/2017 (July 2017).

Thus, failure of the SWD in taking appropriate steps to safeguard the allotted land, non-utilisation of the land for its intended purpose and to ensure immediate initiation of proceedings under TNLA Act, as soon as the encroachment was noticed in 2008 had led to continued encroachment of the land in a prime location worth ₹ 2.27 crore (based on guideline value of ₹ 3,015 per sq.ft. as on 01 April 2018). Further, although GoTN ultimately accorded administrative sanction in October 2013 for construction of WWH, the construction could not be started as the land was under encroachment.

The matter was referred to Government in May 2019; reply has not been received (August 2020).

Audit recommends strengthening of record keeping and periodical physical inspection of departmental lands assigned by Government for specific purposes.

(DEVIKA NAYAR)
Principal Accountant General (Audit-I),
Tamil Nadu

Chennai
The 26 OCT 2020

Countersigned

(GIRISH CHANDRA MURMU)
Comptroller and Auditor General of India

New Delhi
The 04 NOV 2020

APPENDICES

Appendix 1.1

(Reference: Paragraph 1.5.2; Page 3)

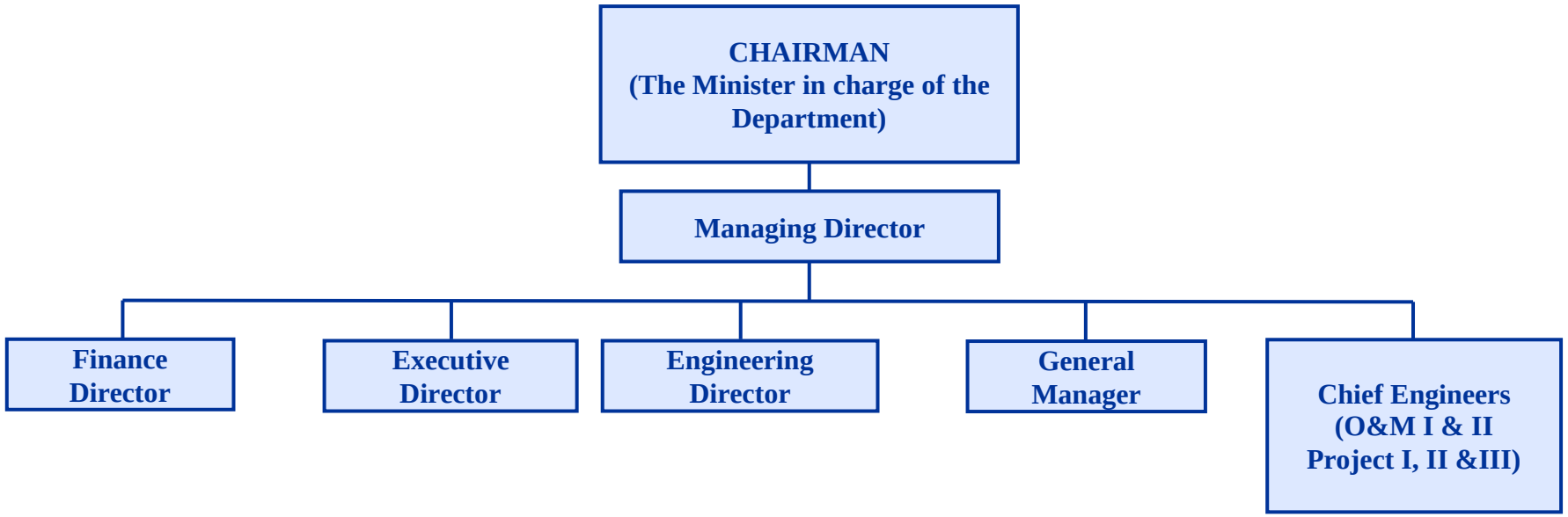
Department-wise details of outstanding Inspection Reports and Paragraphs

Sl. No.	Name of the Department	Number of outstanding	
		Inspection Reports	Audit Observations
1	Adi-Dravidar and Tribal Welfare	163	938
2	Backward Classes, Most Backward Classes and Minorities Welfare	69	178
3	Co-operation, Food and Consumer Protection	119	279
4	Finance	40	86
5	Health and Family Welfare	608	3,068
6	Higher Education	322	1,413
7	Home, Prohibition and Excise	359	1,366
8	Housing and Urban Development	2	11
9	Labour and Employment	63	129
10	Law	31	83
11	Municipal Administration and Water Supply	100	697
12	Personnel and Administrative Reforms	15	106
13	Planning, Development and Special Initiatives	16	30
14	Public	29	113
15	Revenue and Disaster Management	1,555	6,299
16	Rural Development and Panchayat Raj	105	831
17	School Education	470	2,082
18	Social Welfare and Nutritious Meal Programme	185	729
19	Tamil Development and Information	56	139
20	Tourism, Culture and Religious Endowments	47	144
21	Welfare of Differently Abled Persons	78	379
22	Youth Welfare and Sports Development	29	105
23	Special Programme Implementation	3	10
	Total	**4,464**	**19,215**

Appendix 2.1

(Reference: Paragraph 2.1.2; Page 7)

Organisation chart of CMWSSB



Appendix 2.2
(Reference: Paragraph 2.1.5; Page 8)
Sampled field units

Local Bodies in CMA (09)				STPs (12)	
Sl. No.	Name of LB	Sl. No.	Name of LB	Sl. No.	Location
Municipal Corporations:		Town Panchayats		1	Kodungaiyur I, II & III
1	GCC (CMWSSB)	1	Chitlapakkam	2	Koyambedu I, II & III
2	Avadi	2	Thirumazhisai	3	Nesapakkam I, II & III
		3	Thiruneermalai	4	Perungudi I, II & III
Municipalities:		Panchayat Unions:			
1	Tambaram	1	Poonamallee		
		2	St. Thomas Mount		
		3	Villivakkam		

Sewage Pumping Stations (28)					
Sl. No.	Location	Sl. No.	Location	Sl. No.	Location
1	Ayothiyakuppam	11	Nilamangai Nagar	21	Thanthai Periyar Nagar
2	Baby Nagar	12	North Jaganatha Nagar	22	Thiru Nagar
3	Bharathi Nagar SPS RS	13	NSK Nagar	23	Tod Hunter Nagar
4	CMDA D/144	14	Padmanabha Nagar	24	T.V. Nagar
5	Golden Jubilee SPS	15	Saligramam	25	Vadagaram Road side
6	Jafferkhanpet	16	Sarathy Nagar	26	Velachery
7	Katpada (L T/2)	17	Sathiyavanimuthu Nagar	27	Virugambakkam
8	Korattur SPS (New)	18	South Mada Street	28	VOC Nagar
9	K.R. Ramasamy Nagar	19	Suriya Nagar		
10	Nagireddy Thottam	20	Thanikachalam Nagar		

Appendix 2.3

(Reference: Paragraph 2.1.8.2; Pages 11 and 12)

Status of ongoing UGSS projects

Sl. No.	Name of the added area	Date of commencement of work	Scheduled date of completion / No. of months	Percentage of completion	
				On the scheduled date of completion	As of March 2019
1	Ambattur-Package II	13-07-2010	12-07-2012/24	Not available	*73.52*
2	Chinna Sekkadu	01-07-2019	31-12-2021/30	Not applicable	*1.05*
3	Karambakkam				
4	Manali				
5	Manapakkam				
6 7	Sholinganallur-Karapakkam	12-09-2013	11-03-2016/30	*79.58*	*93.75*
8	Mugalivakkam	01-07-2019	31-12-2021/30	Not applicable	*1.88*
9	Nerkundram	04-03-2019	03-09-2021/30	Not applicable	*0.00*
10	Pallikaranai	11-02-2011	10-02-2013/24	*72.00*	*93.77*
11	Perungudi	24-11-2010	23-11-2012/24	*26.14*	*94.00*
12	Porur	16-09-2010	15-09-2012/24	*50.00*	*99.00*
13	Ramapuram	21-02-2014	20-08-2016/30	*41.00*	*65.35*
14	Thiruvottiyur	May 2007-March 2011	November 2008-March 2013	*10.00* to *57.50*	*97.00*
15	Avadi-Package VIII (STP)	April 2012	April 2014/24	*70.00*	*80.25*
16	Tambaram	December 2009 - August 2013	December 2011-July 2015/12-24	*29.18* to *55.00*	*69.42* to *89.27*

Appendix 2.4

(Reference: Paragraph 2.1.8.2(vi); Page 21)

Features and stages of UGSS in other areas of CMA

Karapakkam and Sholinganallur UGSS	
Administrative sanction	October 2012, ₹ 110.90 crore
Technical sanction	September 2006, January 2011 (Revised)
Project components	Collection system, Pumping mains, SPS and lift stations.
Population benefitting	35,530
Contract value	₹ 87.26 crore
Issue of Work order	May 2013
Schedule date for commissioning	March 2016
No. of EOTs granted	03
Penalty levied on contractor	Levy of LD approved, milestone revised accordingly.
Expenditure incurred as of September 2019	₹ 115.63 crore
Present status	In progress

Pallikaranai UGSS	
Administrative sanction	December 2012, ₹ 52.53 crore
Technical sanction	March 2010
Project components	Collection system, Pumping mains and SPS.
Population benefitting	37,286
Contract value	₹ 46.12 crore
Issue of Work order	December 2010
Schedule date for commissioning	February 2013
No. of EOTs granted	10
Penalty levied on contractor	₹ 40 lakh
Expenditure incurred as of September 2019	₹ 20.15 crore
Present status	In progress

Perungudi UGSS	
Administrative sanction	December 2009, ₹ 20.72 crore
Technical sanction	February 2010
Project components	Collection system, Pumping mains and SPS.
Population benefitting	43,111
Contract value	₹ 21.95 crore
Issue of Work order	September 2010
Schedule date for commissioning	November 2012
No. of EOTs granted	12
Penalty levied on contractor	₹ 50 lakh
Expenditure incurred as of September 2019	₹ 17.85 crore
Present status	In progress

Ramapuram UGSS	
Administrative sanction	October 2012, ₹ 48.50 crore
Technical sanction	October 2012
Project components	Collection system, Pumping mains and SPS.
Population benefitting	54,665
Contract value	₹ 41.65 crore
Issue of Work order	August 2013
Schedule date for commissioning	August 2016
No. of EOTs granted	2
Penalty levied on contractor	₹ 66 lakh
Expenditure incurred as of November 2018	₹ 19.95 crore
Present status	Contract terminated in November 2018. GoTN replied (April 2020) that 'Notice inviting tender' has been called for based on SOR 2019-20 and the tender is now under evaluation.

Nerkundram UGSS	
Administrative sanction	January 2017, ₹ 106.55 crore
Technical sanction	September 2017
Project components	Collection system, Pumping mains, SPS and lift stations.
Population benefitting	59,790
Contract value	₹ 56.51 crore
Issue of Work order	January 2019
Schedule date for commissioning	December 2021
No. of EOTs granted	-
Penalty levied on contractor	-
Expenditure incurred	-
Present status	In progress

Appendix 2.5

(Reference: Paragraph 2.1.8.2(viii); Page 23)

Cost escalation in UGSS projects due to undue delays in completion

Sl. No.	Name of the ongoing UGSS	Administrative sanction (AS)	Revised Administrative sanction (RAS)/ Supple-mentary sanction	Expenditure incurred (as of September 2019)	Cost escalation*
		(₹ in crore)			
1	Sholinganallur-Karapakkam	110.90	0	115.63	4.73
2	Thiruvottiyur	28.55	67.63	56.04	39.08
3	Avadi	158.10	197.20	173.62	39.10
	Total				**82.91**

* Difference between RAS and AS (or) between actual expenditure and AS/RAS

Appendix 2.6

(Reference: Paragraph 2.1.8.2(viii); Page 24)

Estimated sewage generated and untreated due to delay in completion of UGSS projects

Sl. No.	UGSS Project	Base year		Estimated Sewage generated (in mld) * (Population (Column 4) x 90 LPCD x 0.85/10,00,000)
		Year	Population	
(1)	(2)	(3)	(4)	(5)
1	Ambattur	2001	3,10,967	23.79
2	Avadi	2007	60,970	4.66
3	Pallikaranai	2010	17,287	1.32
4	Perungudi	2011	43,111	3.30
5	Porur	2008	65,857	5.04
6	Ramapuram	2014	54,665	4.18
7	Sholinganallur-Karapakkam	2014	39,816	3.05
8	Tambaram	2010	1,72,260	13.18
9	Thiruvottiyur	2002	2,11,436	16.17
Total estimated sewage generated				**74.69**

* Estimated sewage generation is based on 90 LPCD as per CPHEEO manual for unsewered areas. This would differ for sewage generation projected in DPRs, which is based on 120 LPCD on completion of the UGSS projects.

Appendix 2.7

(Reference: Paragraph 2.1.10.1; Page 29)

Plugging of sewage outfalls under Phase II

Sl. No.	Name of the Work	Total No. of outfalls		Date of commence-ment	Date of completion		Percent-age of work completed	Actual expenditure incurred (₹ in crore)
		Identi-fied	Plug-ged		Scheduled	Actual		
1	Adyar Package	32	32	01-09-2015	31-11-2016	31-08-2018	*100*	0.45
2	B.Canal Package IA	70	35	03-03-2016	30-09-2019	In progress	*95*	11.00
3	B.Canal Package IB		-	04-03-2019	03-09-2020		*20*	0.67
4	B.Canal Package II		-	21-01-2019	20-01-2020		*40*	5.70
5	Cooum Package IA	8	8	22-09-2016	21-03-2018	21-03-2018	*100*	Not available
6	Cooum Package IB	4	-	16-06-2018	15-12-2019	In progress	*85*	
7	Cooum Package II	44	44	30-06-2016	29-06-2017	28-01-2019	*100*	

Appendix 2.8

(Reference: Paragraph 2.1.11; Page 31)

Details of STPs

Sl. No.	Location of STP and total capacity	Capacity of STP in mld	Average quantity (mld) of sewage allocated from April 2014* to March 2019	Average capacity (mld) available for utilisation	Percentage utilisation during the period from April 2014* to March 2019
(1)	(2)	(3)	(4)	(5)=(3)-(4)	(6)=(4)/(3)x100
1	Kodungaiyur-270 mld	80	59.02	20.98	*73.78*
		80	58.85	21.15	*73.56*
		110	87.77	22.23	*79.79*
2	Koyambedu-214 mld	34	22.04	11.96	*64.82*
		60	33.26	26.74	*55.43*
		120	45.91	74.09	*38.26*
3	Nesapakkam-117 mld	23	17.49	5.51	*76.04*
		40	35.63	4.37	*89.08*
		54	30.06	23.94	*55.67*
4	Perungudi-126 mld	12	10.45	1.55	*87.08*
		54	46.47	7.53	*86.06*
		60	44.74	15.26	*74.57*

* Or date of commissioning, whichever is later

Appendix 3.1

(Reference: Paragraph 3.4.5 (iv); Page 79)

Details of lifts installed in ACL, Chennai

Sl.No.	Lift No. and Location*	Type of lift	Capacity (Persons/ Kgs)	Date of installation	Date of handing over to PWD	Cost of lift (in ₹)	Current status	Whether under AMC	Quotation for re-conditioning (in ₹)	Date of last service
1	L-C7171	Passenger lift	16	30-11-2010	18-07-2016	24,00,000	Functioning after HC intervention	Yes	-	July 2019
2	L-C7172		16	17-03-2011	28-07-2016	24,00,000				
3	L-C7173		16	22-06-2010	25-08-2010	24,00,000	Functioning since handing over			
4	L-C7174		16	26-07-2010	19-11-2010	24,00,000				
5	L-C7175	Goods lift	2,000 kgs	08-01-2011	Not handed over**	24,00,000	Non-functional	-	4,68,000	-
6	L-C7176		2,000 kgs	22-09-2010	24-01-2011	24,00,000	Non-functional		4,60,000	March 2012
7	L-D3573	Passenger lift	08	10-12-2010	10-08-2011	17,18,000			2,97,000	September 2012
8	L-D3574		13	14-09-2010	10-08-2011	19,65,000			3,93,000	
9	L-D3902	Goods lift	2,000 kgs	26-03-2011	Not handed over**	25,00,000	Non-functional		4,38,000	-
10	L-D4901	Passenger lift	13	29-11-2010	10-08-2011	15,75,000	Non-functional		3,88,000	September 2012
	Total					**2,21,58,000 (or) 2.22 crore**			**24,44,000 (or) 0.24 crore**	

* Sl.Nos. 1-6 are installed in Library block and 7-10 in Auditorium block

** Lift Nos. L-C7175 and L-D3902 were not handed over due to non-settlement of bills amounting to ₹ 0.40 crore by the lead contractor to the supplier

Appendix 3.2

(Reference: Paragraph 3.4.6; Page 80)

Details of inmates in 20 WWHs sanctioned during 2013-14

Sl. No.	Name of the District[1]/ Location of WWH	Date of commence-ment	Details of inmates					Current status
			2014-15	2015-16	2016-17	2017-18	2018-19	
1	Pallikaranai	26-06-2014	0	0	-	-	-	Closed down on 31-01-2016
2	Perambur	26-06-2014	0	1	-	-	-	
3	Perambur	26-06-2014	0	0	-	-	-	
4	Selaiyur	26-06-2014	0	2	-	-	-	
5	Selaiyur	26-06-2014	0	2	-	-	-	
6	Vyasarpadi	26-06-2014	0	0	-	-	-	
7	Coimbatore	25-06-2014	-	24	7	-	-	Closed down on 01-04-2016
8	Chengalpattu	11-06-2014	5	5	5	5	5	Both hostels are functioning from a common rented building[2]
9	Sholinganallur	11-06-2014	6	11	5	5	5	
10	Sriperumbudur	11-06-2014	20	20	-	-	-	Closed down on 09-07-2015
11	Perambalur		2	0	0	5	10	Functioning
12	Salem	05-03-2014	4	12	8	16	16	Functioning
13	Sivaganga	02-02-2014	0	12	17	10	0	No inmates since 01-11-2017[3]
14	Thanjavur	25-02-2014	-	4	6	3	7	Functioning
15	Tiruchirappalli	01-07-2014	17	29	28	27	23	Functioning
16	Tirunelveli (Palayamkottai)	01-03-2014	14	26	23	32	28	Functioning
17	Tiruppur	06-02-2014	5	3	0	0	0	No inmates since April 2016[4]
18	Tiruvallur	25-06-2014	22	20	21	22	24	Functioning
19	Vellore	27-01-2014	4	22	15	11	13	Functioning
20	Villupuram		13	16	22	23	27	Functioning

1 Sl. Nos. 1-6: Chennai district; Sl. Nos. 8-10: Kancheepuram district.
2 At Okkiam Thoraipakkam.
3 No inmates, but not officially closed down.
4 No inmates, but not officially closed down.

Appendix 3.3

(Reference: Paragraph 3.4.6.2; Page 82)

Details of construction of WWHs

Sl. No.	Name of the District / Location of WWH	Construction of WWH		Additional amount requested for Revised administrative sanction (₹)
		Identification of suitable site	Current state of construction	
1	Chennai (C) - Saligramam 1	See footnote[5]	Construction yet to commence pending RAS.	1.29 crore
2	(C) - Saligramam 2			1.29 crore
3	(C) - Saligramam 3			1.29 crore
4	(C) - Saligramam 4			1.29 crore
5	(C) - Velachery 1	Proposed to be built on land allotted to ICDS[6]	Construction yet to commence pending RAS.	1.02 crore
6	(C) - Velachery 2			1.02 crore
7	Coimbatore	Identified	Land proposals forwarded to Commissioner of Land Administration is pending.	
8	Chengalpattu	Identified		
9	Sholinganallur	Land not yet identified.		
10	Sriperumbudur	The identified land was reverted back to the District administration as the proposal to construct WWH was withdrawn by DSWO in January 2018.		
11	Perambalur	Identified	Completed[7] and occupied.	9.05 lakh
12	Salem	Identified	Completed[8] and occupied.	25.00 lakh
13	Sivaganga	Land not yet identified.		
14	Thanjavur	Identified	Construction under progress.	Nil
15	Tiruchirappalli	Identified	Construction under progress.	Nil

5 Identification of land to construct six WWHs in Chennai district was not found feasible, despite repeated requests to the District Collector of Chennai and Greater Chennai Corporation. Further, GoTN directed (September 2016) DSW to use the allotted funds for four WWHs to construct additional four blocks of WWH at Saligramam under the GoI scheme for 'Construction of building for providing hostel facilities to working women'. The construction of these four blocks is to be carried out by Tamilnadu Police Housing Corporation Limited (TNPHC), for which revised cost estimates have been furnished (March 2018) by TNPHC.

6 Integrated Child Development Scheme.

7 RAS proposal for ₹ 9.05 lakh for compound wall is pending.

8 RAS proposal for ₹ 25 lakh for additional amenities pending.

Sl. No.	Name of the District / Location of WWH	Construction of WWH		Additional amount requested for Revised administrative sanction (₹)
		Identification of suitable site	Current state of construction	
16	Tirunelveli (Palayamkottai)	Identified	Complete[9] and occupied.	10.42 lakh
17	Tiruppur	Identified	Partially completed[10].	15.80 lakh
18	Tiruvallur	Identified	Land was handed over to PWD in December 2017. Construction yet to commence due to land dispute.	
19	Vellore	Identified	Partially completed[11].	32.36 lakh
20	Villupuram	Identified	Completed[12] and occupied.	8.00 lakh

9 RAS proposal for ₹ 10.42 lakh for compound wall is pending with Government.

10 Super structure completed in March 2017. Pavement, compound wall, barbed wire fencing, water supply arrangement are pending. RAS proposal for ₹ 15.80 lakh is pending with Government.

11 Super structure completed. Compound wall, fans, almirahs, gate, water connection, electrical and power mains are pending. RAS proposal for ₹ 32.36 lakh is pending with Government.

12 RAS proposal for ₹ 8.00 lakh for compound wall is pending with Government.

Appendix 3.4

(Reference: Paragraph 3.4.6.3; Page 83)

Details of manpower appointed

(As of July 2019)

Sl. No.	Name of the District/ Location of WWH	Supr.	Cook	Assistant Cook		Office Assist-ant	Watch-man	Swee-per	Remarks
				Con. Pay	Daily wages				
	Number of Sanctioned Posts	01	02	01	01	01	01	01	
1	Pallikaranai	-	-	-	-	-	-	-	Closed down on 31-01-2016
2	Perambur	-	-	-	-	-	-	-	
3	Perambur	-	-	-	-	-	-	-	
4	Selaiyur	-	-	-	-	-	-	-	
5	Selaiyur	-	-	-	-	-	-	-	
6	Vyasarpadi	-	-	-	-	-	-	-	
7	Coimbatore	-	-	-	-	-	-	-	Closed down on 01-04-2016
8	Chengalpattu	Vac	Vac	Vac	01	Vac	Vac	01	Functioning with available staff
9	Sholinganallur	Vac	Vac	Vac		Vac	Vac		
10	Sriperumbudur	-	-	-	-	-	-	-	Closed down on 09-07-2015
11	Perambalur	Vac	01	01	Vac	Vac	Vac	Vac	Functioning with available staff
12	Salem	Vac	01	01	Vac	Vac	Vac	Vac	
13	Sivaganga	Vac	01	01	01	Vac	Vac	Vac	No inmates, but not officially closed down
14	Thanjavur	Vac	01	01	01	Vac	Vac	Vac	Functioning with available staff
15	Tiruchirappalli	Vac	01	01	01	Vac	Vac	01	
16	Tirunelveli (Palayamkottai)	Vac	Vac	01	01	Vac	01	Vac	
17	Tiruppur	Vac	Vac	Vac	Vac	Vac	Vac	Vac	No inmates, but not officially closed down
18	Tiruvallur	Vac	Vac	01	01	Vac	01	01	Functioning with available staff
19	Vellore	Vac	Vac	Vac	01	Vac	Vac	Vac	
20	Villupuram	Vac	Vac	01	01	01	01	01	

Vac: Vacancy; Supr.: Supervisor; Con.pay: Consolidated pay

Appendix 3.5

(Reference: Paragraph 3.5.2; Pages 87 and 88)

Details of non-realisation of revenue due to non-revision of lease rent

(Amount in ₹)

Name of the lessee	Extent of land (in acres)	Due date for revising lease rent	Number of years	Market value[#] per sq.ft[$]	Market value	Lease rent* to be leviable (14 *per cent* for ZCL and 20 *per cent* for ICL of land cost)	Lease rent collected at old rates	Loss of revenue
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
ZCL	3.68	29-05-2010 to 28-05-2013	3 years	102	1,63,50,682	68,67,286	30,43,146	38,24,140
		29-05-2013 to 28-05-2016	3 years	300	4,80,90,240	2,01,97,900	30,43,146	1,71,54,754
		29-05-2016 to 31-03-2019	2 years and 10 months	300	4,80,90,240	1,90,75,795	28,74,082	1,62,01,713
	3.35	14-03-2011 to 13-03-2014	3 years	120	1,75,11,120	73,54,670	61,28,892	12,25,778
		14-03-2014 to 13-03-2017	3 years	300	4,37,77,800	1,83,86,676	61,28,892	1,22,57,784
		14-03-2017 to 31-03-2019	2 years	300	4,37,77,800	1,22,57,784	40,85,928	81,71,856
	0.63	25-10-2014 to 24-10-2017	3 years	401	1,10,04,563	46,21,916	42,33,918	3,87,998
		25-10-2017 to 31-03-2019	1 year and 5 months	401	1,10,04,563	21,82,572	19,99,350	1,83,221
ICL	1.74	03-09-2013 to 02-09-2016	3 years	310	2,34,96,264	1,40,97,759	0	1,40,97,759
		03-09-2016 to 31-03-2019	2 years and 7 months	310	2,34,96,264	1,21,39,736	0	1,21,39,736
Total								**8,56,44,739**

\# Market value is defined as the value that the land would fetch in open market. Revenue authorities consider all land sales taking place within 1.5 km radius of the land and adopt the average as the market value.

$ As calculated (August 2017 and September 2019) in respect of Sl.Nos. 1,2 and 4 and the rate proposed (January 2015) by CLA in respect of Sl.No. 3

* Market value x Lease rent percentage (14 *per cent* or 20 *per cent* as the case may be) x Number of years

1 acre = 43,560 sq.ft.

Appendix 3.6

(Reference: Paragraphs 3.6.1 (a) and (c)(ii); Pages 89, 90 and 91)

Items of work agreed at abnormally low rates ignored during execution

Sl. No.	Item of work and unit of measurement	Agreed Quantity	Estimated value (₹ in lakh)	Agreed value (₹ in lakh)	*Per cent* of variation in value
Package 3 - Zone 5					
1	Raising or lowering 45/60 cm dia cast iron manhole frames and door (sq.m.)	839	20.94	2.10	*90*
Package 15 - Zone 14					
2	Supply of 160 mm dia ,4 kg/cm^2 PVC pipe (m.)	581	1.86	0.65	*65*
Package 17 - Zone 9					
3	Carting away surplus earth (cu.m.)	7,491	11.00	0.75	*93*
4	Sectioning the site (sq.m.)	14,757	1.27	0.07	*94*
5	Premoulded Bituminous expansion pad of 12 mm thick (sq.m.)	420	1.80	0.04	*97*
6	Construction of inspection chamber of size 60x60x90 cm (Nos.)	90	6.17	0.04	*99*
7	Dismantling plain Cement Concrete work (cu.m.)	6,536	13.09	0.65	*95*
8	Supply of 160 mm dia PVC pipe (m.)	3,019	13.65	3.02	*77*
9	Construction of inspection chamber of size 60x60x60 cm (Nos.)	608	31.64	0.97	*96*
Package 20 - Zone 13					
10	Poly-sulphide sealant in the expansion joints of concrete (RM)	51,385	76.05	12.84	*83*
11	Carting away surplus earth (cu.m.)	116	0.12	0.02	*83*
12	Earthwork excavation (cu.m.)	113	0.06	0.01	*83*
Package 35 - Zone 12					
13	Poly-sulphide sealant in the expansion joints of concrete (RM)	10,727	15.88	5.36	*66*
	Total			**26.52**	

Appendix 3.7

(Reference: Paragraph 3.6.1 (b); Pages 90 and 91)

Items of work agreed at abnormally low rates partly executed

Sl. No.	Item of work and unit of measurement	Quantity of work			Value of work			
		Agreed Quantity	Quantity executed	Quantity executed in *per cent* of Col. 3	Estimated value (₹ in lakh)	Agreed value (₹ in lakh) and *per cent* of variation to Col. 6	Value of work done (₹ in lakh)	Agreed value of work not executed Col. (7) - Col. (8) (₹ in lakh)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Package 3 - Zone 5								
1	Providing and laying quarry rubbish (cu.m.)	1,090	404	*37*	6.77	2.17 (*68*)	0.80	1.37
2	Supply of 160 mm dia PVC pipe (m.)	6,581	1,703	*26*	29.74	17.11 (*43*)	4.43	12.68
Package 11 - Zone 13								
3	Earth work excavation (cu.m.)	809	143	*18*	0.44	0.10 (*78*)	0.02	0.08
4	M 15 Grade Ready Mix Concrete (cu.m.)	694	213	*31*	42.15	25.80 (*39*)	7.88	17.92
5	Construction of inspection chamber of size 60x60x60 cm (Nos.)	754	237	*31*	39.24	26.39 (*33*)	8.30	18.09
Package 15 - Zone 14								
6	Supply of 160 mm dia,6 kg/cm2 PVC pipe (m.)	7,000	197	*3*	34.79	14.00	0.39	13.61
Package 17 - Zone 9								
7	Centering for sides and soffits (sq.m.)	4,484	571	*13*	21.94	2.24 (*90*)	0.29	1.95
8	Interlocking paver blocks 80 mm thick (sq.m.)	14,410	701	*5*	93.07	7.21 (*92*)	0.35	6.86
9	Raising or lowering 45/60 cm diacast iron manhole frames and door (Nos.)	878	113	*13*	21.56	0.44 (*98*)	0.06	0.38
Package 20 - Zone 13								
10	Shuttering for plane surface in foundation and basement (sq.m.)	5,081	146	*4*	21.44	0.51 (*98*)	0.01	0.50
11	Supply of 160 mm dia PVC pipe (m.)	3,240	1,103	*42*	16.10	8.48 (*47*)	2.89	5.59
Package 35 - Zone 12								
12	Centering for sides and soffits (sq.m.)	1,044	287	*27*	5.47	1.05 (*81*)	0.29	0.76
13	M 15 Grade Ready Mix Concrete (cu.m.)	1,444	661	*46*	92.16	54.93 (*40*)	25.15	29.78
		Total						**109.57**

Appendix 3.8

(Reference: Paragraph 3.6.1 (c); Pages 90 and 91)

Items of works executed in excess of the agreed quantities

Sl. No.	Item of work and unit of measurement	Estimated rate (in ₹)	Agreed rate (in ₹) and *per cent* of variation to Col. 3	Quantity			Undue benefit on excess quantities Col. (7) x [Col. (4) - Col. (3)] (₹ in lakh)
				Agreed	Executed	Excess Col. 5 - Col. 6 (in *per cent*)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Package 3 - Zone 5							
1	Interlocking paver blocks 80 mm thick (sq.m.)	653	950 (*45*)	3,710	5,046	1,336 (*36*)	3.97
Package 11 - Zone 13							
2	Dummy joints of M 40 Cement Concrete slab (m.)	85	110 (*29*)	60,512	65,675	5,163 (*9*)	1.29
	Total						**5.26**

Appendix 3.9

(Reference: Paragraph 3.7.1; Page 97)

List of sampled ESIDs under RAMO, Madurai

Sl.No.	ESID	District
1	Begampur	Dindigul
2	Dindigul	
3	Kodaikanal	
4	Edaikodu	Kanyakumari
5	Kuzhithurai	
6	Manavalakurichi	
7	Paravai	Madurai
8	Silaiman	
9	Ramanathapuram	Ramanathapuram
10	Manamadurai	Sivagangai
11	Sivagangai	
12	Andipatti	Theni
13	Theni	
14	Ettayapuram	Thoothukudi
15	Kovilpatti	
16	Tiruchendur	
17	Thoothukudi	
18	Pettai (Mobile)	Tirunelveli
19	Thailayuthu	
20	Tirunelveli	
21	Vickramasingapuram	
22	Kariapatti	Virudhunagar
23	Rajapalayam	
24	Sivakasi	
25	Srivilliputtur	
26	Tiruthangal	

Appendix 3.10

(Reference: Paragraph 3.7.1; Page 97)

List of drugs supplied to sampled ESIDs despite non-indenting

Sl. No.	CRC No.	Name of the Drug	Quantity			Rate	Excess value supplied
			Actual indent	Supp-lied	Excess	(in ₹)	
1	1344	Relcer Gel 180 ml	15,500	1,16,780	1,01,280	42.77	43,31,745.60
2	1495	Alucil Plus 170 ml	3,000	51,088	48,088	22.99	11,05,543.12
3	1413	Glutazene	3,000	76,650	73,650	6.09	4,48,528.50
4	1742	BioRS	0	11,000	11,000	8.85	97,350.00
5	1838	Zinox	0	3,250	3,250	377.00	12,25,250.00
6	33	Hiphylate Elixir	1,200	24,600	23,400	34.64	8,10,576.00
7	1512	Ambronac	0	10,300	10,300	29.00	2,98,700.00
8	1664	Prospan 100 ml	16,500	1,16,080	99,580	50.60	50,38,748.00
9	1840	Airtec SF	200	4,830	4,630	297.00	13,75,110.00
10	1421	Gatosyl AM	2,000	30,660	28,660	64.50	18,48,570.00
11	2018	Coversyl AM	0	2,310	2,310	121.62	2,80,942.20
12	2019	Natrilam 2.5	4,000	22,500	18,500	71.58	13,24,230.00
13	2021	Coversyl Plus HD	0	3,000	3,000	125.46	3,76,380.00
14	1865	Tolpidol D	0	4,500	4,500	102.00	4,59,000.00
15	1690	Galvus 50 mg	0	5,304	5,304	225.00	11,93,400.00
16	1896	Trajenta 5 mg	3,500	5,544	2,044	341.60	6,98,230.40
17	1902	Syncefix	19,100	26,900	7,800	126.42	9,86,076.00
18	1551 a	Thementin LB 625	3,000	21,900	18,900	45.60	8,61,840.00
19	1551 b	Thementin LB 375	0	16,520	16,520	38.57	6,37,176.40
20	1552 c	Furomax-C 625	0	8,400	8 ,400	100.90	8,47,560.00
21	1937	Sensodent KF	5,500	14,640	9,140	35.00	3,19,900.00
22	1624	Mistdress	0	4,320	4,320	153.00	6,60,960.00
23	484	Hiodine	0	1,920	1,920	440.00	8,44,800.00
24	1315	Astymin Forte	3,000	14,160	11,160	49.00	5,46,840.00
25	1961	Nugica	0	1,692	1,692	132.42	2,24,054.64
26	1792	Hepatoglobine Mikros	0	3,000	3,000	97.10	2,91,300.00
27	1795	Triple A Cal OS	1,500	16,010	14,510	87.30	12,66,723.00
Total							**2,83,99,533.86**

Appendix 3.11

(Reference: Paragraph 3.7.2; Page 98)

Status of pending works at RGGGH, Chennai

(As of December 2019)

Sl. No.	Name of the department and work (Construction of building for)	Forwarding of rough cost estimate by DME	GoTN's sanction		Civil Works				RAS (₹ in crore)	
			Date	Estimate amount (₹ in crore)	Approxi-mate amount of work to be done (₹ in crore)	Date of commence-ment	Work to be completed within	Date of completion of main civil works	1st RAS amount and date of sanction	2nd RAS amount and date of sanction
1	Out Patients (Basement + Ground (G) + 8 Floors)	24-11-2014	12-03-2015	58.65		17-08-2016	-	In progress*	-	-
2	Rheumatology (G + 8 Floors)	17-11-2014	10-04-2015	19.65	17.00	22-01-2016	18 months (22-07-2017)	25-02-2017	23.12/ August 2019	-
3	Nephrology and Urology (G + 8 Floors)	17-02-2015	03-09-2015	29.48	24.24	12-02-2016	18 months (12-08-2017)	10-03-2017	29.89/ June 2017	35.36/ August 2019
4	Hepatology (G + 5 Floors)	25-08-2015	12-02-2016	16.70	14.41	29-02-2016	18 months (29-08-2017)	08-06-2018	21.73/ August 2019	-
				1.71	For provision of (i) Furniture, (ii) Bed head panel for medical gas, (iii) LEAD door shutters, (iv) Cupboard shutters and (v) Granite slab for countertop platforms.					
	Total estimate amount (124.48 + 1.71)			**126.19**						

* GoTN accorded AS for ₹ 42.88 crore for construction of three additional floors in January 2018

Appendix 3.12

(Reference: Paragraph 3.7.3; Page 102)

Estimated loss of interest revenue due to non-investment of the SDRF balance in Government Securities as per SDRF guidelines

Amount (₹ in crore)	Period	Months	Interest receipt at 4 *per cent* per annum	Interest receivable estimated at 7.82 *per cent**	Loss of interest
			(₹ in lakh)		
3.32	December 2016 to June 2019	30	33.20	64.91	31.71
16.73	March 2018 to June 2019	15	83.65	163.54	79.89
4.91	October 2018 to June 2019	8	13.09	25.60	12.51
	Total		**129.94**	**254.05**	**124.11**

* If invested in dated Government securities as envisaged in SDRF guidelines for investment of SDRF fund balance

Glossary of abbreviations

Abbreviations	Full Form
AC	Air conditioning
ACL	Anna Centenary Library
ACS	Additional Chief Secretary to Government
Addl. CP	Additional Commissioner of Police
AMC	Annual Maintenance Contract
AMRUT	Atal Mission for Rejuvenation and Urban Transformation
ASP	Activated Sludge Processing
BE	Budget Estimate
BOD	Biological Oxygen Demand
BRS	Bank Reconciliation Statement
CAG	Comptroller and Auditor General of India
CCMC	Coimbatore City Municipal Corporation
CLA	Commissioner of Land Administration
CMA	Chennai Metropolitan Area
CMA	Commissioner of Municipal Administration
	Commissioner/ Director of Municipal Administration
CMCHIS	Chief Minister's Comprehensive Health Insurance Scheme
CMD	contracted maximum demand
CMS	Central Medical Stores
CMWSSB	Chennai Metropolitan Water Supply and Sewerage Board
COD	Chemical Oxygen Demand
CPHEEO	Central Public Health and Environmental Engineering Organisation
CRA	Commissioner of Revenue Administration
CRC	Centralised Rate Contracts
CRRP	Cooum River Eco Restoration Project
CRRT	Chennai Rivers Restoration Trust
CSP	City Sanitation Plan
CSW	Commissionerate of Social Welfare
CTP	Chennai Traffic Police
cu.m.	cubic meter
DEE	Director of Elementary Education
DFRS	Director of Fire and Rescue Services
DHH	District Headquarters Hospitals
DM&GC	District Monitoring and Grievance Committee

Abbreviations	Full Form
DME	Director/Directorate of Medical Education
DMRHS	Director of Medical and Rural Health Services
DPC Act	Duties, Powers and Conditions of Services Act
DPC	Drug Purchase Committee
DPL	Director of Public Libraries
DPR	Detailed Project Reports
DRM	Divisional Railway Manager
DSE	Director of School Education
DSO	District Social Welfare Offices
DSW	Director of Social Welfare
DSWO	District Social Welfare Officer
DTP	Director of Town Panchayat
EO	Executive Officer
EOT	Extension of time
EPF	Employees' Provident Fund
ESI	Employees' State Insurance
ESIC	Employees' State Insurance Corporation
ESID	Employees' State Insurance dispensaries
ESIH	Employees' State Insurance hospitals
ESIS	Employees' State Insurance Scheme
FAS	Facade Access System
FFS	Fire fighting System
FIR	First Information Report
FLSC	First Level Specialist Committee
GBC	Green Building Concept
GCC	Greater Chennai Corporation
GDCH	Government Dental College Hospital
GHG	greenhouse gases
GoI	Government of India
GoTN	Government of Tamil Nadu
HEP	High end procedures
HoD	Head of the Department
HRT	Hydraulic Retention Time
HSC	House service connections
HT	High Tension
IBMS	Integrated Building Management System

Abbreviations	Full Form
ICL	M/s. India Cements Limited
IEC	Information, Education and Communication
IPs	Insured Persons
IRs	Inspection Reports
IUDM	Integrated Urban Development Mission
JDHS	Joint Director of Health Service
JFV	Joint Field Visit
JICA	Japan International Cooperation Agency
JNNURM	Jawaharlal Nehru National Urban Renewal Mission
Km	Kilometers
KSSM	Kerala Social Security Mission
KVA	Kilo Volt Ampere
LPCD	litres per capita per day
LT	Low Tension
MAWS	Municipal Administration and Water Supply
MCHs	Medical College Hospitals
mld	million litre per day
MO	Medical Officers
MoUD	Ministry of Urban Development
MS	Medical Superintendents
MT	Metric Tonne
NABH	National Accreditation Board for Hospitals and Healthcare Providers
NGT	National Green Tribunal
NQAS	National Quality Assurance
NUSP	National Urban Sanitation Policy
O&M	operation and maintenance
OHT	Over Head Tank
PD	Project Director
PDS	Public Distribution System
PHH	Priority House Hold
PMJAY	Pradhan Mantri Jan Arogya Yojana
PPE	personal protection equipment
PPP	Public Private Partnership
PT	Property Tax
PWD	Public Works Department

Abbreviations	Full Form
RAMO	Regional Administrative Medical Officers
RAS	Revised Administrative Sanction
RDMA	Regional Director of Municipal Administration
RGGGH	Rajiv Gandhi Government General Hospital, Chennai
RMC	Ready mix concrete
RTA	Regional Transport Authority
SBM	Swachh Bharat Mission
SBR	Sequencing Batch Reactor
SCERT	State Council of Educational Research and Training
SCM	Smart City Mission
SDGs	Sustainable Development Goals
SDRF	State Disaster Response Fund
SIPCOT	State Industries Promotion Corporation of Tamil Nadu Limited
SM&GC	State Monitoring and Grievance Committee
SMC	Stanley Medical College
SPS	Sewage Pumping Stations
sq.ft.	square feet
sq.km	square kilometers
SR	Southern Railway
STP	sewage treatment plants
SUC	SWM user charges
SWD	Storm Water Drains
	Social Welfare Department
SWM	Solid Waste Management
SWM Rules	Solid Waste Management Rules
TANGEDCO	Tamil Nadu Electricity Generation and Distribution Corporation
TCMC	Thanjavur City Municipal Corporation
TKR	Total Knee Replacement
TNBM	Tamil Nadu Budget Manual
TNHSP	Tamil Nadu Health Systems Project
TNMSC	Tamil Nadu Medical Services Corporation Limited
TNPCB	Tamil Nadu Pollution Control Board
TNSTC	Tamil Nadu State Transport Corporation
TNTBESC	Tamil Nadu Textbook and Educational Services Corporation
TNTTR	TN Transparency in Tender Rules

Abbreviations	Full Form
TNUDP III	Tamil Nadu Urban Development Programme - III
TP	Town Panchayat
TPA	Third Party Administrator
TPD	Tonnes per Day
TSS	Total Suspended Solids
UGSS	Underground Sewerage System
UIIC	United India Insurance Company Limited
ULBs	Urban Local bodies
URN	Unique Reference Number
VRDL	Viral Research and Diagnostic Laboratory
WB	World Bank
WWH	Working Women Hostels
ZCL	M/s. Zuari Cements Limited

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