

Municipal Administration and Urban Development Department

Performance Audit of Solid Waste Management in Urban Local Bodies

Chapter I Introduction

1.1 Definition and Characteristics of Solid Waste

"Solid Waste" as defined⁵³ in Solid Waste Management Rules, 2016 (SWM Rules, 2016) means and includes solid or semi-solid domestic waste and other waste⁵⁴ generated in the area under the local authorities and other entities⁵⁵, excluding industrial waste, bio-medical waste, e-waste, battery waste⁵⁶ and radio-active waste. Municipal Solid Waste Management (MSWM) in urban areas has emerged as one of the biggest challenges that our country faces today. The situation is aggravated by rapid urbanisation. Inadequate management of waste has significant negative externalities in terms of public health and environmental outcomes. Further, it also has an adverse impact on the aesthetic appearance of the surroundings.

There are 142 Urban Local Bodies (ULBs) in the State of Telangana (13 Municipal Corporations and 129 Municipalities). The urban population as per 2011 census in these 142 ULBs is 1,44,40,527, out of which population of Greater Hyderabad Municipal Corporation (GHMC) is 67,39,158 (47 per cent). The position of Solid Waste disposal in all the ULBs in India *vis-à-vis* the State of Telangana is shown in **Table-1.1**.

Table-1.1: Position of Solid Waste disposal in India *vis-à-vis* State of Telangana

Description	{Figures in Tonnes per day (TPD)}	
	India	Telangana
Generated	1,60,039	9,965
Collected	1,52,750	9,965
Treated	79,956	7,530
Land filled	29,427	991 (only GHMC)
Open dumpsites	43,367	1,444 (Other 141 ULBs)

Source: Annual Report on implementation of Solid Waste Management Rules, 2016 for the year 2020-21 issued by the Central Pollution Control Board (CPCB), New Delhi

Solid Waste generated in the State of Telangana (9,965 TPD) constitutes 6.23 per cent of the total Solid Waste generated in the country (1,60,039 TPD).

⁵³ Rule-3 (46) of Solid Waste Management Rules, 2016 notified by Ministry of Environment, Forest and Climate Change (MoEFCC), Government of India (GoI) in April 2016

⁵⁴ sanitary waste, commercial waste, institutional waste, catering and market waste and other non-residential wastes, street sweepings, silt removed or collected from the surface drains, horticulture waste, agriculture and dairy waste, treated bio-medical waste

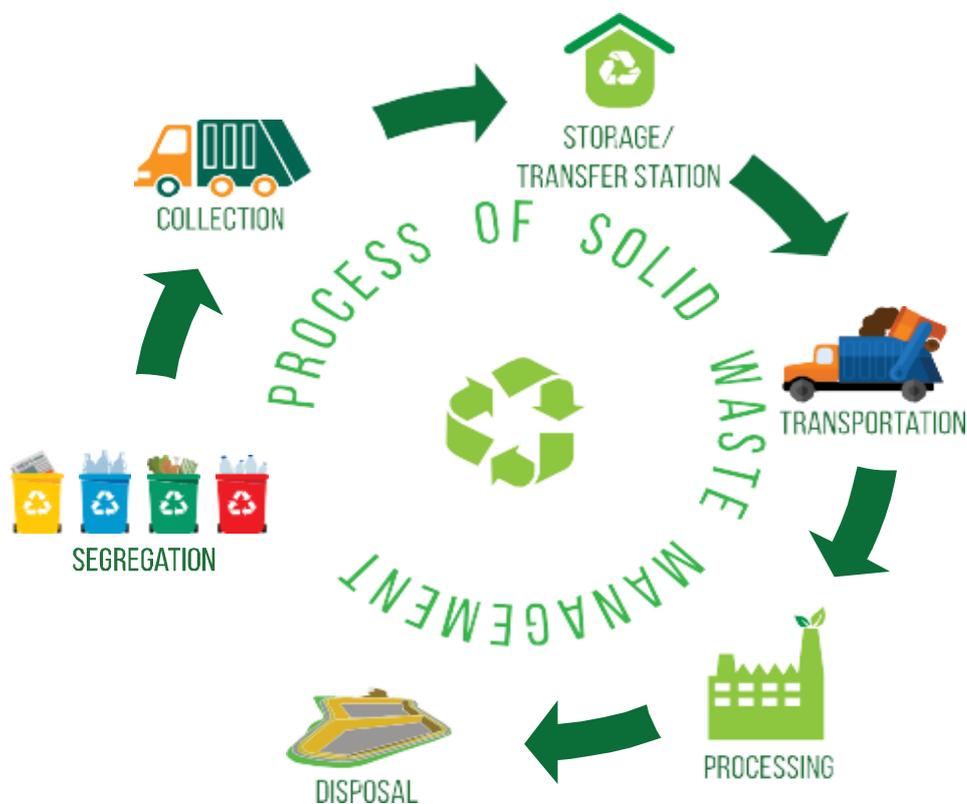
⁵⁵ outgrowths in urban agglomerations, census towns as declared by the Registrar General and Census Commissioner of India, notified areas, notified industrial townships, areas under the control of Indian Railways, airports, airbases, Ports and harbours, defence establishments, special economic zones, State and Central government organisations, places of pilgrims, religious and historical importance as may be notified by respective State government from time to time

⁵⁶ Rule-3(40) of Battery Waste Management Rules, 2020 defines Battery waste as battery and its components thereof, whole or in part discarded as waste by the consumer or bulk consumer as well as rejects from manufacturing, refurbishment and repair process

1.2 Process of Solid Waste Management

Successful Solid Waste Management (SWM) strategy requires that all the waste that is generated should be properly and fully collected at source. Thereafter, all of it should be transported and safely processed in accordance with the principles of reduce, reuse and recycle. The inert material remaining after processing has to be safely disposed. The process of SWM is depicted diagrammatically in **Chart-1.1**.

Chart-1.1: Process of Solid Waste Management



1.3 Framework for administration and management of Solid Waste

The Central Government has the power to take measures necessary for protecting and improving the quality of the environment, subject to the provisions of the Environment (Protection) Act, 1986. The SWM Rules, 2016 which were framed under the Environment (Protection) Act, 1986, provide a legal framework for management and disposal of Solid Waste.

The framework for administration and management of SWM in India is broadly divided into three tiers-Central, State and Local Bodies. Other stakeholders that play a crucial role are households, businesses, industries, informal sector, Non-Governmental Organisations (NGOs), Community Based Organisations (CBOs), Self-Help Groups (SHGs), *etc.* Involvement of all these stakeholders is necessary at several stages of SWM. The role and responsibilities of stakeholders involved in the process of SWM in urban areas are given in **Table-1.2**.

Table-1.2: Role and Responsibilities of stakeholders involved in process of SWM

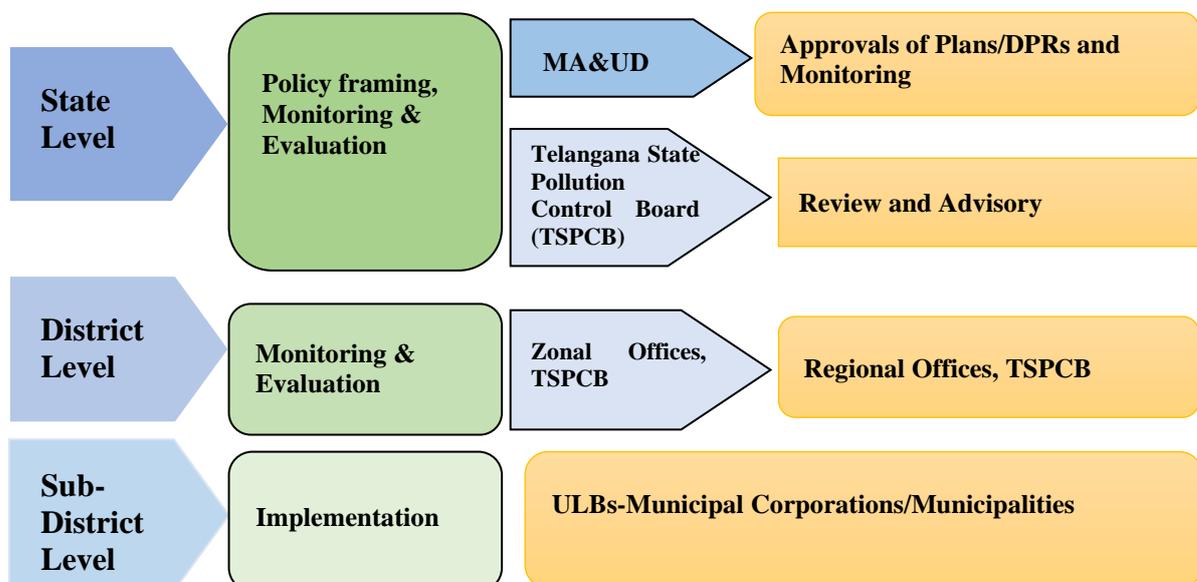
Institution/stakeholders	Role and responsibilities in SWM
Central Government {Ministry of Environment, Forest and Climate Change (MoEFCC), Ministry of Urban Development (MoUD) and Central Pollution Control Board (CPCB)}	Framing of Laws and Rules; Policies and Norms; Guidelines; Manuals; technical assistance; financial support; Monitoring the implementation of laws and rules.
State Government {Urban Development Department headed by Secretary/Principal Secretary and State Pollution Control Board (SPCB) headed by Member Secretary}	Policy framing, monitoring implementation of laws and rules in the ULBs; State Policy and SWM strategy; Guidelines, Manuals, and technical assistance; financial support; reporting on Service Level Benchmarks (SLBs) to the MoUD; Capacity Building of local bodies; granting consent to set up treatment and disposal activities.
District Collector or Deputy Commissioner (DC)	Review the performance of ULBs on waste management process; facilitate identification and allotment of suitable land for Solid Waste processing and disposal facilities.
Urban Local Bodies (headed by Commissioner)	Implementation of SWM Rules, providing SWM services; preparation of SWM plan; framing bye-laws; levy and collection of fees; financing SWM system; creating public awareness; and involvement of informal sector in SWM.
Informal Sector (waste recyclers, NGOs, CBOs and private partners)	Resource recovery and recycling at different stages; providing support to the local recycling industry; involvement of community; creating awareness; collection and transportation of waste; and technology providers.

Source: MSWM Manual, 2016

1.4 Organisational setup

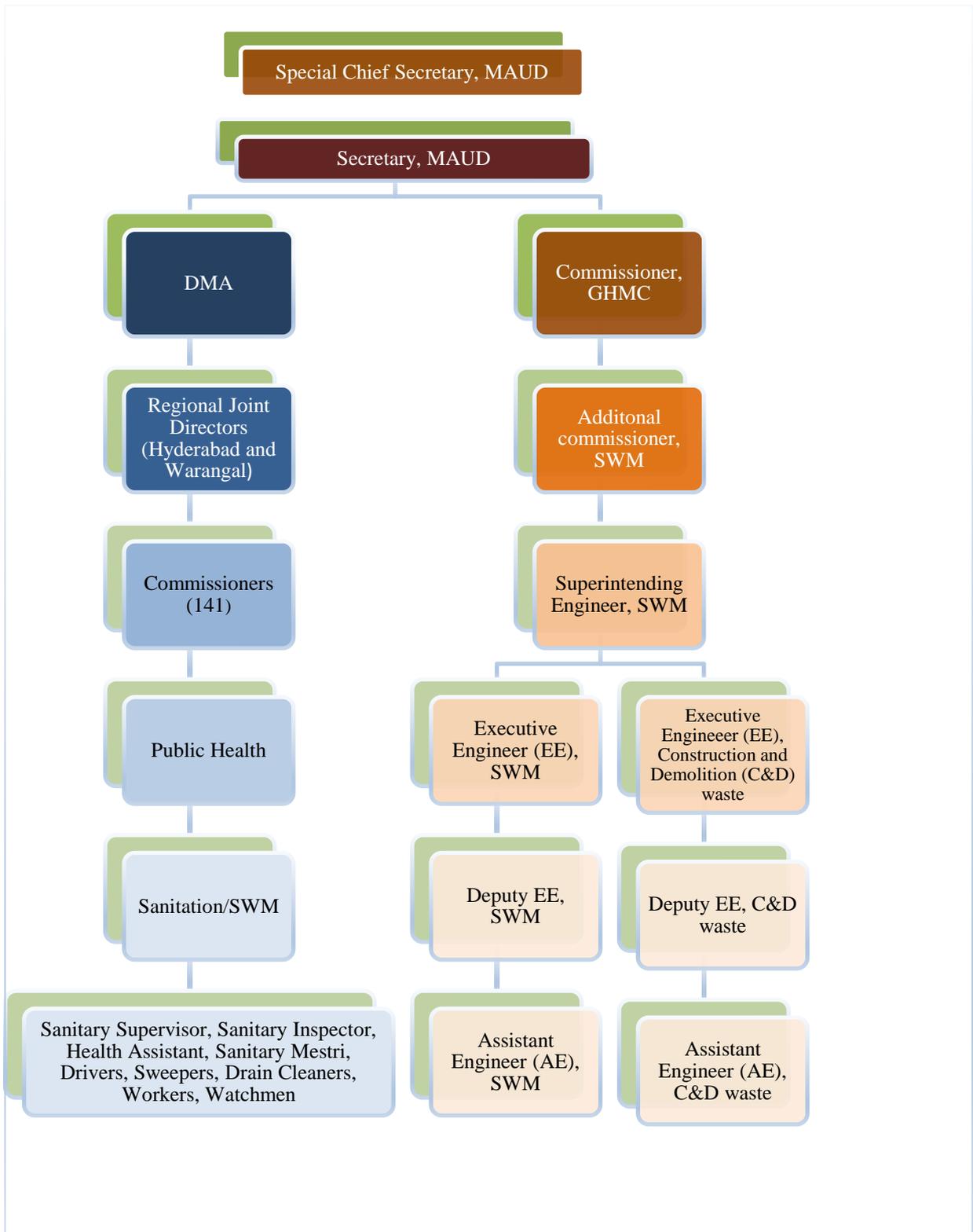
The Role of various authorities at all levels in policy framing, implementation and monitoring of SWM in the State of Telangana is depicted in **Chart-1.2**.

Chart-1.2: Role of various authorities in planning, execution and monitoring of Municipal Solid Waste Management



Municipal Administration and Urban Development (MA&UD) Department is entrusted with the responsibility of Urban Sector Management and is headed by a Special Chief Secretary. The Organisational setup for the management of Solid Waste in the State of Telangana is shown in **Chart-1.3**.

Chart-1.3: Organisational setup for management of Solid Waste in the State of Telangana



Source: Compiled from the Official Websites of MA&UD Department, CDMA, other test-checked 14 ULBs and information furnished by GHMC

1.5 Duties and Responsibilities of the State Government, State Pollution Control Board and Urban Local Bodies in the implementation of Solid Waste Management activities

The Duties and Responsibilities of the State Government, State Pollution Control Board and the ULBs in the implementation of SWM activities as mandated in SWM Rules, 2016 are given in brief in **Table-1.3**.

Table-1.3: The Duties and Responsibilities of the State Government, State Pollution Control Board and the ULBs in the implementation of SWM activities

Reference to Rule	Institution/ Stakeholders	Role and Responsibilities mandated as per SWM Rules, 2016
Rule 11	State Government/ Secretary, Urban Development of a State through Commissioner and Director of Municipal Administration	<ul style="list-style-type: none"> • Prepare a State Policy and SWM Strategy for the State. • Arrange for capacity building of ULBs. • Start a Scheme of registration of waste pickers and waste dealers. • Ensure implementation of SWM Rules by all ULBs in the State. • Ensure identification and allocation of suitable lands for Processing and Disposal facilities. • Facilitates establishment of common regional landfill sites. • Notify Buffer Zone for SWM facilities.
Rule 16	State Pollution Control Board	<ul style="list-style-type: none"> • Enforce SWM Rules, 2016 in the State and in all ULBs. • Review implementation of the SWM Rules, 2016. • Give directions for safe handling and disposal of Domestic Hazardous Waste. • Examine the proposals for authorisation for the setting up of Waste Processing Facilities. • Issue, renew, suspend or cancel the authorisations issued and monitor the standards prescribed or laid down in Schedules-I and II of SWM Rules, 2016. • Monitor Environmental standards in the Waste Processing Facilities.
Rule 15	Local Authorities/ULBs	<ul style="list-style-type: none"> • Frame bye-laws, prescribe user fee and criteria for levying of spot fines. • Create public awareness through Information Education and Communication (IEC) activities. • Make adequate provision of funds for capital investments as well as Operation and Maintenance of Solid Waste Management services in the annual budget. • Establish a system to recognise waste pickers and facilitate formation of Self-Help Groups (SHGs). • Establish waste deposition centres for Domestic Hazardous Waste and ensure safe storage and transportation of domestic hazardous waste • Promote setting up of decentralised compost facility. • Arrange door-to-door collection of MSW and collect waste from sweeping streets. • Setup secondary storage facility and Material Recovery Facility. • Transport segregated biodegradable, non-biodegradable waste and promote home composting. • Make an application/renewal with SPCB for setting up of Solid Waste processing facilities. • Facilitate Construction, Operation and Maintenance of Solid Waste processing facilities on their own or with private sector participation. • Undertake Construction, Operation and Maintenance of Sanitary landfills. • Investigate and analyse old dump sites for bio-mining, bio-methanation or Scientific Capping <i>etc.</i> • Prepare and submit Annual Reports on implementation of SWM.

Source: SWM Rules, 2016

1.6 Audit Objectives

Performance Audit of Solid Waste Management was carried out with the objective of assessing whether:

- Strategy and Planning of Solid Waste management in ULBs is commensurate with the waste generated and concurrent with the prevailing legal framework;
- Municipal tasks associated with Solid Waste management including collection, segregation, storage, transportation, disposal and social inclusion of informal waste workers were economical, efficient and effective;
- Planning, construction, commissioning, operation and maintenance of Solid Waste management projects in ULBs was effective, efficient and financially sustainable;
- Monitoring and evaluation of Solid Waste management system including adequacy of awareness creation, citizen engagement for effecting behavioral change, complaint redressal mechanism for citizens, assessment of environmental impacts and implementation of internal control was adequate and effective.

1.7 Audit Criteria

Audit findings were benchmarked against criteria sourced from the following:

- Municipal Solid Waste Management (MSWM) Manual, 2016 issued by Central Public Health and Environmental Engineering Organisation (CPHEEO), Ministry of Urban Development, Government of India (GoI);
- The Solid Waste Management Rules, 2016;
- Construction and Demolition Waste Management Rules, 2016
- Performance parameters set out in SLB guidelines;
- The Environment (Protection) Act and Rules 1986;
- Water (Prevention and Control of Pollution) Act, 1974;
- Solid Waste Management Policy and Strategy of Government of Telangana (September 2018)
- Instructions, guidelines, policies issued by Central Pollution Control Board, State Pollution Control Board, GoI / State Government on Solid Waste management from time to time.

1.8 Audit Sample and Scope

The performance audit was conducted between August 2022 and March 2023 covering a period of five years from 2017-18 to 2021-22. Out of 142 ULBs, 15 ULBs were test-checked in audit (GHMC and 14 other ULBs), by sampling as detailed below.

1.8.1 Selection of Urban Local Bodies

In Telangana there are 142 ULBs (13 Municipal Corporations and 129 Municipalities). The Urban population in all these 142 ULBs as per Census 2011 was 1,44,40,527 and out of this, the population of GHMC is 67,39,158 (47 per cent). In the State of Telangana, there are no Nagar Panchayats, as the existing Nagar Panchayats were upgraded as Municipalities during the years from 2018 to 2020, post bifurcation of the composite State of Andhra Pradesh. Sample selection of ULBs was done with the following criteria:

- a. Selection of GHMC was done based on population size (47 per cent of the total population of all ULBs in the State) and considerable amount of Solid Waste generated by GHMC (more than 50 per cent of the total Solid Waste generated in the State, Para 2.6, Table-2.2 refers). In GHMC, there are six Zones consisting of 30 Circles (**Appendix-1.1**). The quantum of collection of Solid Waste zone-wise for the audit period (2017-18 to 2021-22) from highest to lowest is given in **Table-1.4**.

Table-1.4: Quantum of collection of Solid Waste zone-wise in GHMC during the period 2017-18 to 2021-22, from highest to lowest

Sl. No	Name of the Zone	Total quantity of Solid Waste collected in Metric Tonne (MT)
1.	Charminar	20,93,307
2.	Secunderabad	20,16,657
3.	Khairatabad	17,95,051
4.	Kukatpally	16,34,418
5.	LB Nagar	15,04,042
6.	Serlingampally	10,47,765

Source: Information provided by GHMC

Three Zones with two Circles each in that Zone were selected on Random basis for taking up audit, as detailed in **Table-1.5**.

Table-1.5: Selected Zones and Circles in GHMC

Sl. No	Name of the Zone	Circles selected for audit (two each in a Zone)
1.	Charminar	Circle-6, Malakpet and Circle-7 Santoshnagar
2.	Khairatabad	Circle-17 Khairatabad, Circle-18 Jubilee Hills
3.	Kukatpally	Circle-23 Moosapet, Circle-24 Kukatpally

- b. Out of the remaining 141 ULBs, 14 ULBs-two Municipal Corporations⁵⁷ and 12 Municipalities⁵⁸ were selected by Simple Random Sampling without Replacement method.

From the sampling, 22 ULBs were excluded, as the subject of Solid Waste management was covered while conducting audit of these 22 ULBs in connection with Performance Audit of 74th Constitutional Amendment Act and District Centric Audits during 2021-22.

1.9 Audit Methodology

An Entry Conference was held on 24 August 2022 with the Secretary to MA&UD Department, Director of Municipal Administration (DMA), Additional Commissioner (SWM), GHMC and Additional Commissioner (Finance), GHMC, in which the Audit Framework was discussed. The audit methodology involved scrutiny of documents, issue of audit queries, obtaining responses, Joint Physical Verification (JPV) with municipal staff and collection of photographic evidence in the test-checked 15 ULBs (GHMC and 14 other ULBs). Besides, the offices of the Special Chief Secretary, MA&UD Department, Commissioner and Director of Municipal Administration (CDMA) and Telangana State Pollution Control Board were addressed for obtaining required information pertaining to SWM.

⁵⁷ Khammam and Peerzadiguda

⁵⁸ Bollaram, Chandur, Haliya, Kalwakurthy, Khanapur, Kothagudem, Mahabubnagar, Mancheri, Nagaram, Wardhannapet, Yellareddy and Zaheerabad

The Draft Report containing Audit findings was forwarded (July 2023) to the Government/Authorities for their comments. The Audit findings were discussed with the Secretary to Government, MA&UD Department in the Exit Conference conducted in September 2023. Replies of the Government to the extent received as of November 2023 were suitably incorporated.

1.10 Acknowledgement

Audit acknowledges the cooperation extended by the State Government, CDMA, TSPCB, GHMC and test-checked other 14 ULBs in conducting the Performance Audit.