

## Chapter V

### Processing and Disposal of Municipal Solid Waste

#### 5.1 Processing of Municipal Solid Waste

Solid Waste Management Rules, 2016 define "processing" as any scientific process by which segregated Solid Waste is handled for the purpose of reuse, recycling or transformation into new products. Extent of processing done in the test-checked ULBs is discussed below.

##### 5.1.1 Status of Municipal Solid Waste processing

The status of waste collected and processed in GHMC and in test-checked other 14 ULBs during the period 2017-18 to 2021-22 are given in **Table-5.1**.

**Table-5.1: Status of waste processed in GHMC and test-checked other 14 ULBs**

(Figures in TPD)

Year	GHMC			Other test-checked 14 ULBs		
	MSW collected	Processed*	Percentage of processing to collected MSW	MSW collected	Processed	Percentage of processing to collected MSW
2017-18	4,864	4,279	88	308	79	26
2018-19	5,298	4,610	87	345	106	31
2019-20	5,799	5,177	89	414	143	35
2020-21	5,668	4,958	87	477	181	38
2021-22	6,166	5,633	91	525	252	48

Source: Information furnished by GHMC and other test-checked 14 ULBs

\* Includes MSW transported by other ULBs permitted by GHMC to Jawaharnagar Processing and Disposal facility

It could be seen from **Table-5.1** that percentage of waste processed in test-checked other 14 ULBs was less than 50 *per cent* when compared to nearly 90 *per cent* waste that was processed in GHMC during 2017-22. A major portion of Solid Waste in test-checked other 14 ULBs was dumped at respective dumpsites. Low rate of processing of waste in the test-checked other 14 ULBs indicates inadequate infrastructure/waste processing facilities and lack of appropriate strategies for SWM.

##### 5.1.2 Jawaharnagar Treatment and Disposal Facility (Integrated Municipal Solid Waste Management for Hyderabad city)

The Jawaharnagar T&D facility commenced operations from 18 February 2012 and the MSW collected from GHMC and also certain surrounding Municipal Corporations, Municipalities and Gram Panchayat and other Authorities (*Para 3.5 refers*) was being treated and disposed at this Facility. The Facility commenced initially with 2,000 TPD treatment capacity in 2012, which was enhanced from time to time to 8,000 TPD as of 2022, in view of the increased quantity of MSW reaching the site. The project was being monitored by Environment Protection Training and Research Institute (EPTRI), Hyderabad as the Independent Engineer (IE).

A brief of various waste processing facilities in the Jawaharnagar T&D facility is as below:

- a. **Bio-Methanation Plant:** Established in July 2018 with 3 TPD capacity and not in operation from 2020-21 onwards.
- b. **Compressed Biogas (CBG) Plant:** Established in October 2021 with 5 TPD capacity. The landfill gas generated from the capped site is transported to the CBG plant using a common header line and after processing, it is bottled and sold to Bhagyanagar Gas Ltd.
- c. **Leachate Treatment Plant:** Established in April 2013 with 1,100 Kilo Liters per Day (KLD) capacity. Leachate generated during the waste treatment process *i.e.*, from tipping floor, pre-sorting area, compost area, RDF storage, sanitary landfill, MSW pit of WtE *etc.*, is collected at the common leachate collection sumps. The leachate is pre-treated at the 1,100 Kilo Liters per day capacity plant established in the site. The pre-treated leachate is treated in the Reverse Osmosis (RO) system and the permeate from RO System was being used to maintain greenery at the site and the rejects in the form of solid were mixed with RDF and utilised as fuel in WtE Plant instead of disposing in the scientific landfill. However, leachate problem was not fully resolved as observed during JPV of Jawaharnagar T&D facility (January 2023).
- d. **Refuse Derived Fuel plant:** Established in February 2015 with 150 Tonnes per Hour capacity. The RDF obtained from pre-sorting is sent to the WtE Plant operational at the site. Based on requirement from other consumers of RDF such as cement industries, the RDF from pre-sorting section is passed through magnetic separator and thereafter through a shredder for size reduction upto 15 mm in size. Further, it passes through a screen to remove sand/ silt. The end product would be converted into Briquettes for transporting to the end users.
- e. **Plastic Recycling Plant:** Established in April 2015 with a capacity of 20 TPD. The recyclable plastics are segregated, washed and processed into waste disposal bags.
- f. **Waste to Energy Plant:** Established in August 2020 with 24 Mega Watt (MW) capacity. The segregated inorganic fraction (Refuse Derived Fuel- RDF) of about 1,350 TPD was used as fuel in the WtE plant established at the site for generating electricity.
- g. **Windrow Composting:** Established in February 2012 with a capacity of 2,040 TPD and increased to 7,000 TPD in 2021-22. The segregated organic fraction is rearranged into trapezoidal heaps called windrows. The windrows are sprayed with Effective Micro-organisms culture and undergo weekly turning operations (for the purpose of aeration) to help biodegradation of the organic MSW into compost.

A flow chart (provided by GHMC) depicting the process of Municipal Solid Waste Management from household to disposal at Jawaharnagar T&D facility is shown in **Appendix-5.1**. A flow chart (provided by the Concessionaire) depicting the process of collection, Treatment and Disposal (T&D) of MSW at Jawaharnagar T&D facility is shown in **Appendix-5.2**.

A comparative picture of the status of Jawaharnagar Dumpsite prior to handing over to the Concessionaire and the present status of the Jawaharnagar T&D facility are shown in Exhibit No.11 and Exhibit No.12.

**Exhibit No.11, Para no.5.1.2  
Jawaharnagar Dumpsite prior to handing over to the Concessionaire**

	
<p align="center"><b>Dump at Compost Plant area</b></p>	<p align="center"><b>Contaminated water bodies</b></p>
	
<p align="center"><b>Burning of waste</b></p>	<p align="center"><b>Uncontrolled flow of leachate</b></p>

Source: Pictures provided by GHMC

**Exhibit No.12, Para no.5.1.2**  
**Jawaharnagar Dumpsite after handing over to the Concessionaire**



Source: Pictures provided by GHMC

## 5.2 Waste processing and treatment technology

In accordance with Section 4.1 of MSWM Manual, 2016 (Part-I), selection and adoption of MSW processing technologies should be based on defined selection criteria and subject to a detailed due diligence study which ascertains the appropriateness of the technology to the prevailing conditions of the respective ULB.

Solid Waste Management Policy and Strategy of Government of Telangana mandated (Para 8) few technology options for processing and treatment of Solid Waste as given below:

- Composting
- Bio-methanation
- Refuse Derived Fuel
- Material Recovery Facility
- Waste to Energy
- Integrated facility such as Material Recovery Facility and Composting/ Bio-methanation/ Waste to Energy

Rule 15(v) of SWM Rules-2016 stipulates that ULBs should facilitate construction, operation and maintenance of Solid Waste processing facilities and preference shall be given to decentralised processing to minimise transportation cost and environmental impacts such as bio-methanation, micro composting, vermicomposting, anaerobic digestion or any other appropriate processing for bio-stabilisation of bio-degradable wastes.

Audit observed the following on the establishment and operation of the waste processing facilities in the test-checked ULBs:

### 5.2.1 Composting

Solid Waste Management Rules, 2016 defines "composting" as a controlled process involving microbial decomposition of organic matter. Further, Rule 4 of SWM Rules, 2016 prescribes duties of waste generators<sup>137</sup>, which *inter alia* include composting of bio-degradable waste in partnership with local body. The bio-degradable waste should be processed, treated and disposed through composting or bio-methanation. The residual waste should be given to the waste collectors or agency as directed by the local body.

Further, Rules 3(15) and 11(h) of SWM Rules, 2016 mandate establishment of dispersed facilities for decentralised processing by demarcating separate space in the development plan for group housing or commercial, institutional or any other non-residential complex exceeding 200 dwellings or having a plot area exceeding 5,000 square meters (*sqm*) for maximising the processing of bio-degradable waste and recovery of recyclables to minimise transportation of waste for processing or disposal.

<sup>137</sup> (i) All resident welfare and market associations, (ii) All gated communities and institutions with more than 5,000 *sqm* area, and (iii) All hotels and restaurants

## In GHMC:

### (i) Non-setting up of decentralised processing facilities for composting of bio-degradable waste

Greater Hyderabad Municipal Corporation had furnished a list of 142 BWGs<sup>138</sup> having decentralised processing facilities but the quantum of composting of bio-degradable waste done was not provided to Audit. Further, GHMC stated that there are 168 Group Housings (GHs) and Non-Residential Complexes (NRCs) with more than 200 dwellings and 385 GHs and NRCs having a plot area exceeding 5,000 *sqm* for whom separate space was demarcated for waste management (decentralised waste processing). However, it was observed from the data furnished to Audit by GHMC on these GHs and NRCs that decentralised waste processing facilities were not set up for composting of bio-degradable waste.

Further, GHMC did not quantify the MSW generated by these GHs and NRCs and there was no decentralised waste processing done during 2017-22. This indicated lack of monitoring by GHMC and resulted in transportation of unprocessed MSW load to Jawaharnagar T&D facility from these GHs and NRCs to that extent.

The State Government replied (September 2023) that GHMC has been putting all efforts for sensitising through IEC activities, the above categories of waste generators for following SWM Rules, 2016 and the same may show results in due course of time.

Since separate space was demarcated for waste management for decentralised processing, the same needs to be carried out by the GHs and NRCs. This would lead to a reduction of the quantum of unprocessed waste being transported from these GHs and NRCs to the TS/SCTPs and therefrom to Jawaharnagar T&D facility. This may result in consequent savings in payment of TF to the Concessionaire to that extent.

### (ii) Decrease in quantity of compost due to mixing of MSW

In the DPR for IMSWM Project prepared by HIMSWL, it was mentioned (Para 4.2) that approximately 47 *per cent* of wastes was wet organic in nature and hence high rate of production of compost of 25 *per cent* was expected (Para 4.3.1 of DPR) as output from the 47 *per cent* wet organic waste.

Audit observed that out of 1,06,68,049 MT of MSW processed during 2017-22, a quantity of 50,13,983 MT (47 *per cent*) could be taken up for composting and the compost expected to be produced works out to 12,53,495 MT (25 *per cent* of 50,13,982 MT), as per the estimates made in the DPR. The compost generated as furnished to Audit was 2,63,179 MT, which constitutes only 5.2 *per cent* compost output against the estimated 25 *per cent*.

Greater Hyderabad Municipal Corporation replied that though source segregation was done, due to mixed MSW received at Jawaharnagar T&D facility, the envisaged compost output could not be achieved.

The reply confirms the fact that despite stated source segregation, MSW was transferred in mixed manner to Jawaharnagar T&D facility resulting in decrease in the quantity of compost.

<sup>138</sup> Hotels, Marriage Halls, Function Halls, Markets, etc.

### In test-checked other 14 ULBs:

(i) **Decentralised processing facilities for composting:** Audit observed from the data on decentralised processing facilities furnished by the 14 ULBs that except three ULBs (Khammam, Mancherial and Peerzadiguda), the other 11 test-checked ULBs had no GHs and NRCs with more than 200 dwellings and GHs and NRCs with a plot area exceeding 5,000 sqm for whom separate space was required to be demarcated for waste management (decentralised waste processing).

In the three ULBs there were GHs and NRCs (Khammam-5 nos each, Mancherial-6 nos each and Peerzadiguda-5 nos each) and separate space was demarcated to them for decentralised waste processing. However, decentralised waste processing was not done during 2017-22.

(ii) **Composting facilities and utilisation of compost:** The data furnished by the nine test-checked ULBs on establishment of waste processing facilities were checked during JPV of dumpsites and the Audit observations are given in **Table-5.2**. The other five ULBs<sup>139</sup> had furnished that there are no waste processing facilities for composting under operation.

**Table-5.2: JPV observations with regard to composting facilities in the test-checked ULBs with reference to the information furnished to Audit**

Sl. No	Name of the ULB	Information furnished to Audit by the ULB regarding waste processing facilities	JPV observations
1.	Kalwakurthy	Windrow composting facility established with a capacity of 20 MT.	No composting plant facility exists. Though it was mentioned that wet waste was processed, the details of compost generated was shown as NIL in the data furnished to Audit.
2.	Khanapur	Windrow composting facility established with a capacity of 6 MT.	No composting facility exists and composting yard was under construction ( <b>Exhibit No.13 (A)</b> ).
3.	Kothagudem	Vermicomposting facilities established with 200 MT capacity.	Composting done in the facility and the compost was utilised for Municipal parks ( <b>Exhibit No.13 (B)</b> ).
4.	Mahabubnagar	Windrow composting facility established with 320 MT capacity and Vermicomposting facility established with 600 MT capacity.	Both the facilities exists and in operation. The compost generated was utilised by the ULB for its own plantations/parks/medians and other Harithaharam activities ( <b>Exhibit No.13 (C)</b> ).
5.	Mancherial	Vermicomposting facility established with 30 MT capacity.	Composting done in the facility and the compost was utilised for Municipal parks.
6.	Nagaram	Vermicomposting facility established with 60 MT capacity.	No composting facility/plant established and composting of MSW collected from households was not being done and Compost was prepared on open ground with left over vegetable waste collected from vegetable markets only ( <b>Exhibit No.13 (D)</b> ). Mixed MSW was transferred to Jawaharnagar T&D facility (under GHMC) for processing & treatment.

<sup>139</sup> Bollaram, Chandur, Haliya, Wardhannapet and Yellareddy

Sl. No	Name of the ULB	Information furnished to Audit by the ULB regarding waste processing facilities	JPV observations
7.	Peerzadiguda	Vermicomposting facility established with 100 MT capacity.	The MSW was transferred to Jawaharnagar facility (under GHMC) for processing & treatment. Hence, there was no composting activity of MSW in the ULB. However, left over vegetable waste from vegetable markets was collected and compost prepared in the facility, which was utilised for Harithaharam activities ( <b>Exhibit No.13 (E)</b> ).
8.	Zaheerabad	Vermicomposting facility established with 12 MT capacity.	Composting done in the facility and the compost was utilised for Municipal parks ( <b>Exhibit No.13 (F)</b> ).
9.	Khammam	Vermicomposting facility established with 45 MT capacity.	Compost facility established was not put to use ( <b>Exhibit No.13 (G)</b> ).

In the Annual Report on SWM activities for the year 2021-22, submitted (July 2022) by TSPCB to CPCB, it was mentioned that 229 waste to compost facilities were established in 141 ULBs in the State, with a total capacity of 1,120 TPD. However, Audit observed during test-check of dumpsites in 14 ULBs that no composting facilities were in operation in eight ULBs<sup>140</sup> and in Haliya ULB, a shed constructed for compost preparation in the dumpsite was lying idle (**Exhibit No.13 (H)**). Further, no other waste processing facilities (Refuse Derived Fuel, Bio-methanation, Waste to Energy, Biogas and Plastic Recycling units) were established in the test-checked other 14 ULBs.

The State Government replied (November-2023) that in Bollaram, Chandur, Kalwakurthy, Khammam and Khanapur ULBs, composting facilities were established and in operation. Supporting documentary/pictorial evidence, however, was not furnished to Audit. The State Government accepted (November 2023) that no composting facilities were established in Wardhannapet and Yellareddy ULBs.

Lack of strategy and planning for providing adequate infrastructure for MSW processing resulted in increased dumping of more unprocessed mixed MSW in the open dumpsites (*Para 5.3 refers and also Table-5.5 and Appendix-2.1*), leading to environmental pollution and posing health hazards.

<sup>140</sup> Bollaram, Chandur, Kalwakurthy, Khammam, Khanapur, Nagaram, Wardhannapet and Yellareddy

**Exhibits: Para 5.2.1/Table-5.2**  
**JPV observations on composting facilities in the test-checked ULBs**

<p><b>Exhibit No.13 (A): Khanapur ULB (JPV dated 29 November 2022): Composting yard under construction</b></p>	<p><b>Exhibit No.13 (B): Kothagudem ULB (JPV dated 20 December 2022): Composting facility</b></p>

**Exhibits: Para 5.2.1/Table-5.2**  
**JPV observations on composting facilities in the test-checked ULBs**

<p><b>Exhibit No.13 (C): Mahabubnagar ULB (JPV dated 13 December 2022): Composting facility</b></p>	<p><b>Exhibit No. 13 (D): Nagaram ULB (JPV dated 15 November 2022): Left over vegetable waste from vegetable markets was collected and compost prepared on open ground</b></p>
<p><b>Exhibit No.13 (E): Peerzadiguda ULB (JPV dated 04 October 2022): Left over vegetable waste from vegetable markets was collected and compost prepared in the facility</b></p>	<p><b>Exhibit No.13 (F): Zaheerabad ULB (JPV dated 12 January 2023): Composting facility</b></p>

	
<p><b>Exhibit No.13 (G): Khammam ULB (JPV dated 20 March 2023): Compost Pits filled with mixed waste and not put to use</b></p>	<p><b>Exhibit No.13 (H): Haliya ULB (JPV dated 18 November 2022): Shed constructed for compost preparation in the dumpsite was lying idle</b></p>

### 5.2.2 Waste to Energy plants

Section 3.3 of MSWM Manual, 2016 (Part II) provides for Waste to energy which refers to the process of generating energy in the form of heat or electricity from MSW. Energy from MSW can be achieved through-

- Thermal processes like incineration or combustion of RDF; and
- Biological processes like bio-methanation and further conversion into electrical power or automotive fuel (compressed biogas).

#### 5.2.2.1 Non-creation of special fund – Waste to Energy Plant in Greater Hyderabad Municipal Corporation

In the DPR (Para 5.1) of IMSWM, it was proposed to install a total of 4 units of 600 TPD MSW Combustors with an aggregate power capacity of 48 MW in total in Phase-I and Phase-II of 24 MW each. The Concessionaire initially, after obtaining Environmental Clearance (EC) from the State Level Environment Impact Assessment Authority (SEIAA) in June 2012 and Consent for Establishment (CFE) from TSPCB in September 2014, established one 19.8 MW WtE Plant, which was in operation since August 2020. Thereafter the Concessionaire obtained Environmental Clearance (EC) from MoEFCC, GoI in December 2021 for expansion of RDF based WtE Plant from 19.8 MW to 48 MW (2 units of 24 MW each). GHMC stated (April 2023) that at present, one 24 MW WtE Plant is in operation and the second 24 MW plant was under construction.

One of the conditions {Clause (xi)} set forth while giving Environmental Clearance (EC) by SEIAA in June 2012 was that a fund shall be maintained by the Concessionaire for Environment Protection measures, with a capital cost of ₹34 crore and recurring cost of ₹12 lakh per annum. Further ₹60 lakh shall be allocated for Socio-Economic Development. These funds are required to be kept in a separate account and should not be diverted for any other purpose. Year-wise expenditure shall be reported to the SEIAA, MoEFCC, GoI, and its Regional office located at Bengaluru.

In response to an Audit Enquiry, GHMC replied (April 2023) that the Concessionaire had not established a separate fund but had incurred an expenditure of ₹47.85 crore<sup>141</sup> during September 2013 to March 2021.

Audit observed that items of expenditure relating to Environment Protection measures were not defined while according EC by SEIAA and also no expenditure was incurred by the Concessionaire towards Socio-Economic Development. Year-wise reports submitted by the Concessionaire as mandated to SEIAA, MoEFCC, GoI and its Regional Office at Bengaluru were not furnished to Audit.

#### **5.2.2.2 Status of other Waste to Energy Plant taken up by Greater Hyderabad Municipal Corporation**

In addition to the existing 24 MW WtE plant at Jawaharnagar, GHMC proposed WtE plant at Bibinagar and the status of is as follows:

**Bibinagar WtE plant :** GHMC entered into an MoU (May 2000) with M/s RDF Power Project Ltd (RDFPPL) (the Company) to establish WtE plant of 11 MW capacity at a total project cost of ₹82.50 crore. The debt equity ratio was 70:30 between the company and GHMC respectively. As per MoU, the Company should establish the WtE plant in its own land at Chinnaravulapally (Village) in Bibinagar.

An amount of ₹3.75 crore was invested as equity share by GHMC in this WtE project from March 2008 to September 2011 by purchasing 37,50,000 shares at ₹10 per share from the Company. MSW requirements were about 700 TPD as raw material for generating power and GHMC had to supply 630 TPD and the remaining 70 TPD shall be transported by the Company on its own. However, due to technical reasons the commissioning of the plant could not be done.

The proposed WtE plant at Bibinagar could not be commissioned even after a lapse of more than 22 years of MoU and the invested amount of ₹3.75 crore by GHMC remained unfruitful.

The State Government replied (September 2023) that the WtE plant would be commissioned after the ongoing legal issues are resolved.

#### **5.2.2.3 Waste to Energy Plants in other Urban Local Bodies in the State**

Central Pollution Control Board in compliance with the NGT orders (May & August 2016) had issued selection criteria for waste processing technologies, wherein it was suggested that the WtE plants are found cost-effective for processing waste 500 TPD and above.

Audit observed that there were no WtE plants in the test-checked other 14 ULBs.

The Commissioner and Director of Municipal Administration stated (May 2023) that in other 141 ULBs the MSW generated was less than 500 TPD and hence no WtE plants were established.

<sup>141</sup> (i) Green Belt: ₹2.63 crore, (ii) Landfill gas through Compressed Bio-Gas (CBG): ₹12.89 crore, (iii) Odour Management in the T&D facility around critical areas: ₹0.56 crore, (iv) Solar one MW: ₹2.04 crore and (v) Waste water & Leachate: ₹29.73 crore

The reply was not in consonance with the fact that there was mention of three WtE Plants<sup>142</sup> being proposed/setup in the Annual Reports 2020-21 and 2021-22 of TSPCB. Further progress on the establishment and operation of the above three WtE plants was not furnished to Audit.

### **5.2.3 Biogas facility**

Biogas is a gaseous renewable energy source produced from raw materials such as agricultural waste, manure, municipal waste, plant material, sewage, green waste, wastewater, and food waste. Biogas is produced by anaerobic digestion with anaerobic organisms or methanogens inside an anaerobic digester, biodigester or a bioreactor.

A biogas plant is a facility that provides oxygen-free conditions where anaerobic digestion can occur. It is an artificial system where you can turn waste into sustainable energy and fertilizers, with positive effects on the environment.

#### **5.2.3.1 Biogas facility in Greater Hyderabad Municipal Corporation**

A Compressed Biogas (CBG) Plant was established in October 2021 with 5 TPD capacity in Jawaharnagar T&D facility. The landfill gas generated from the capped site is transported to the CBG plant using a common header line and after processing, it is bottled and sold to Bhagyanagar Gas Ltd.

#### **5.2.3.2 Biogas facility in other Urban Local Bodies in the State**

Audit observed that there were no Biogas plants in the test-checked other 14 ULBs.

In the Annual Report on SWM of TSPCB for the year 2021-22 submitted to CPCB, it was mentioned that Biogas facilities were set up and were in operation in five ULBs<sup>143</sup> with a capacity of 21 TPD (7 nos).

Audit enquired (March 2023) on the status of the Biogas facilities, output, revenue generated and utility of biogas generated. In response, CDMA replied (June 2023) that-

- In Greater Warangal Municipal Corporation (GWMC), 2.5 TPD Biogas plant was established and the generated biogas was being converted into electricity and utilised within GWMC office building premises and in Balasamudram Children's Park.
- In Siddipet ULB, 10 TPD Biogas plant was established and the biogas generated was converted into bio-Compressed Natural Gas and being sold to the agencies.
- In Kompally and Sircilla ULBs, one TPD each Biogas plant established were not put in operation.

<sup>142</sup> WtE Plants established at Suryapet Municipality, Nalgonda District (12.6 MW) and Sultanabad (Mandal), Karimnagar District (12 MW) but not in operation; and proposed 12 MW WtE plant at Yacharam in Ibrahimpatnam Municipality

<sup>143</sup> GHMC, GWMC, Kompally, Siddipet and Sircilla

### 5.2.4 Establishment of additional processing facilities in Greater Hyderabad Municipal Corporation as per Concession Agreement

The Concessionaire, as part of PPP project was required (Clause 2.1(h)) to establish new processing & disposal facilities at two places Choutuppal in Nalgonda District), Lakdaram in Medak District and any other place as identified by GHMC during the course of time. The required land was to be provided by GHMC.

However, it was observed in audit that proposals for alienation of land to the extent of 100 acres in Survey No.738 located at Lakdaram (Village) were submitted (June 2018) by GHMC to the District Collector, Sangareddy District. However, the proposals were deferred as the said land was allotted to Rajiv Swagraha Corporation Limited. The matter was under pursuance by GHMC. The land allotment in and around Choutuppal could not materialise due to resistance from the local public and Public Representatives.

The extent of usage of land in Jawaharnagar T&D facility for various purposes of MSW management is given in **Appendix-5.3**. The available 339.01 acres of land has been utilised for various purposes of MSW management and land to the extent of 12.2 acres was stated as in dispute, leaving no unused land. In the Annual Report of the Concessionaire for the year 2021-22, it was mentioned that an extent of 14.5 acres of land was being utilised for waste disposal at Jawaharnagar.

Audit observed that the Concessionaire had addressed (August 2021) GHMC regarding shortage of land in the existing facility for developing further landfill cells for the process rejects and the ash from the WtE plants and also emphasised the urgent need to acquire additional land for sustainability of IMSWM project for the near future.

Audit enquired about the steps taken to identify alternate sites to establish SWM processing and disposal facilities and GHMC replied (February 2023) that a site at Pyranagar was identified and land to the extent of 152 acres was given in advance possession to GHMC by the Revenue Department. It was stated that the land was handed over to the Concessionaire on 13 December 2022 for setting up MSW Processing and Disposal facility. TSPCB had accorded Consent for Establishment (CFE) for Processing and Disposal facility in the site and the work would be completed within six months (August 2023).

The State Government replied (September 2023) that Forest Department is resolving the issue at the proposed diversion of forest land and the approach road would be cleared shortly at Pyranagar site. However, the fact remains that additional T&D facility was not yet set up by the GHMC at Pyranagar and also could not be set up in the earlier identified sites at Lakdaram and Choutuppal due to unresolved titular issues.

### 5.3 Disposal of Municipal Solid Waste

The Solid Waste Management Rules, 2016 defines "disposal" as the final and safe disposal of post processed residual Solid Waste and inert from street sweepings and silt from surface drains on specified land, to prevent contamination of ground water, surface water, ambient air and attraction of animals or birds. All the waste that cannot be reused/recycled/processed

further finds its way to the landfills<sup>144</sup>, the ultimate destination of the Solid Waste. The details of Solid Waste generated and final disposal of waste to landfill/dumpsite<sup>145</sup> in the State, GHMC and test-checked other 14 ULBs during 2017-22 are given in **Table-5.3**, **Table-5.4** and **Table-5.5** respectively.

**Table-5.3: Details of Solid Waste generated by all ULBs in the State and final disposal of waste to landfill/dumpsites during 2017-22 (figures in TPD)**

Particulars	2017-18	2018-19	2019-20	2020-21	2021-22
Waste generated	7,871	8,497	9,285	9,965	11,057
Collected	7,814	8,360	9,270	9,965	11,057
Uncollected	57	137	15	0	0
Processed*	4,895	5,747	6,070	7,530	8,611
Sanitary landfilled (Inert waste/rejects) in GHMC only	593	869	593	991	1,011
Waste to dumpsite	2,326	1,744	2,607	1,444	1,435
Percentage of waste to dumpsite out of collected waste	29.77	20.86	28.12	14.49	12.98

Source: Annual Reports on SWM submitted by TSPCB to CPCB

\* Includes MSW transported from ULBs nearby GHMC to the Jawaharnagar T&D facility

**Table-5.4: Details of Solid Waste generated and final disposal of waste to landfill in GHMC during 2017-22 (figures in TPD)**

Particulars	2017-18	2018-19	2019-20	2020-21	2021-22
Waste generated	4,864	5,298	5,799	5,668	6,166
Collected	4,864	5,298	5,799	5,668	6,166
Uncollected	0	0	0	0	0
Processed*	4,279	4,610	5,177	4,958	5,633
Sanitary landfilled (Inert waste/rejects)	728	870	916	1,050	1,007
Percentage of waste landfilled out of collected waste	15	16	16	19	16

Source: Information provided by GHMC

\* Includes MSW transported from ULBs nearby GHMC to the Jawaharnagar T&D facility

**Table-5.5: Details of Solid Waste generated and final disposal of waste to dumpsites in test-checked other 14 ULBs during 2017-22 (figures in TPD)**

Particulars	2017-18	2018-19	2019-20	2020-21	2021-22
Waste generated	337	382	437	494	538
Collected	308	345	414	477	525
Uncollected	29	37	23	17	13
Processed	79	106	143	181	252
Sanitary landfilled (Inert waste/rejects)	0	0	0	0	0
Waste to dumpsite (Collected minus Processed)	229	239	271	296	273
Percentage of waste to dumpsite out of collected waste	74	69	65	62	52

Source: Information provided by the test-checked other 14 ULBs

<sup>144</sup> The term sanitary landfill is defined as a unit in operation for final disposal of 'Municipal Solid Waste' on land, designed and constructed with the objective of minimising impact to the environment and according to the SWM Rules, 2016 (Section 4.4 of MSWM, Manual, 2016, Part-II)

<sup>145</sup> According to SWM Rules, 2016, 'dumpsites' mean a land utilised by local body for disposal of Solid Waste without following the principles of sanitary land filling

It could be seen from the above **Table-5.4** that MSW processing & disposal was effectively taking place only in GHMC. In the other test-checked 14 ULBs less than 50 *per cent* of waste was processed and major portion of remaining Solid Waste was dumped at dumpsites (**Table-5.5**). The landfills are designed to minimise the impact of the waste on the environment by containment of the waste. However, in the absence of adequate treatment/processing facilities in 14 ULBs, more than 50 *per cent* of unprocessed MSW was disposed to open dumpsites, posing health and environment hazards in the area.

Further, there were discrepancies in the data on sanitary landfilled (Inert waste/rejects) between State Annual Reports and GHMC figures furnished to Audit (**Table-5.3** and **Table-5.4**), which indicated non-reconciliation of figures by TSPCB with GHMC before inclusion in the Annual Reports and submission of the same to CPCB.

### **5.3.1 Failure to designate land for setting up landfill sites**

The provisions of Rule 11 (f) and 12 (a) of SWM Rules, 2016, stipulate that the State and District authorities shall facilitate identification and allocation of suitable land for setting up Solid Waste processing and disposal facilities to local authorities within one year from the date of notification of the Rules.

It was mentioned in the Annual Reports 2020-21 and 2021-2022 on SWM submitted by TSPCB to CPCB that landfill sites were identified in 141 ULBs. However, landfills were not constructed for scientific disposal of MSW. The overall percentage of disposal of unprocessed MSW in the dumpsites in test-checked other 14 ULBs was more than 50 *per cent*, resulting in unhygienic disposal of mixed MSW posing health and environment hazards in the area (*Table-5.5, Para 5.3 refers*).

Non-allocation of suitable land for establishment of landfill sites to ULBs indicated lack of effective action by State/District level authorities and hence processing & disposal facilities could not be set up in the test-checked other 14 ULBs, even after a lapse of more than five years of notification of the SWM Rules, 2016.

### **5.3.2 Non-declaration of Buffer Zone in Jawaharnagar Treatment and Disposal Facility**

Rule 3(7) of SWM Rules, 2016 defines “buffer zone” as a zone of no development to be maintained around Solid Waste Processing and Disposal facility, exceeding 5 TPD of installed capacity. This shall be maintained within total area allotted for the Solid Waste Processing and Disposal facility.

Rule 11(l) of SWM Rules, 2016 stipulate that Secretary–in-charge, Urban Development in the States shall notify buffer zone for the Solid Waste processing and disposal facilities of more than five TPD in consultation with the State Pollution Control Board. The buffer zone shall be prescribed on case-to-case basis by the local body in consultation with concerned State Pollution Control Board as per Schedule I A(ix) of SWM Rules, 2016.

**In GHMC:** When Audit enquired about development of buffer zone in Jawaharnagar Processing and Disposal facility, GHMC replied (November 2022) that a proposal was sent (April 2021) to Hyderabad Metropolitan Development Authority (HMDA) for notification

of buffer zone all around the facility and the same was under consideration by HMDA.

The reply underscores the fact that even though more than 10 years had lapsed after Jawaharnagar T&D facility started operations in 2012, MA&UD Department had not declared a buffer zone in consultation with TSPCB, which was in violation of SWM Rules, 2016 (Para 7.2 (c) refers).

### 5.3.3 Disposal of waste and management of dumpsites in test-checked other 14 Urban Local Bodies

Audit observed that there are no landfills in the 14 test-checked ULBs and MSW was dumped in the open dumpsites. Although the dumpsites were operated in the designated places, documentary evidence regarding receipt of approvals from the Revenue authorities were furnished by only eight ULBs<sup>146</sup>. JPV observations on dumpsites are detailed in **Table-5.6**.

**Table-5.6: JPV observations on dumpsites in test-checked other ULBs**

Sl. No	Nature of observation	Name of the ULB in which noticed
1.	Dumping of mixed MSW without segregation ( <b>Exhibit No.14</b> ).	Khanapur, Mancherial, Peerzadiguda, Yellareddy, Zaheerabad, Chandur, Haliya, Khammam Mahabubnagar and Wardhannapet
2.	Fire emitting from the dumpsite/ MSW burnt at the site resulting in air pollution/Smoke emanating from the dumped MSW ( <b>Exhibit No.15</b> ).	Khanapur, Nagaram, Mancherial and Mahabubnagar
3.	The Dumpsite was adjacent to Government Junior and Degree College causing inconvenience to the students. A flood flow canal was adjacent to dumpsite, which may lead to mixing of waste in the dumpsite with flood water during heavy rains and also may pollute the water stream ( <b>Exhibit No.16 (A)</b> ).	Haliya
4.	A canal was adjacent to the dumpsite with possibility of mixed waste and rain water getting mixed in the canal, thereby polluting the water stream ( <b>Exhibit No.16 (B)</b> ).	Kothagudem
5.	The Dumpsite was adjacent to Agricultural fields with mixed waste and plastic waste spreading across the fields, causing foul smell and also causing inconvenience to the farmers in the surrounding Agricultural fields. ( <b>Exhibit No.16 (C)</b> ).	Chandur
6.	MSW collected was being dumped at Bathukamma Kunta (a water body) beside Road towards Somarpet village in Survey no.1406 of Yellareddy ULB, in the absence of approach road/road connectivity to the identified dumpsite. The water in the Bathukamma Kunta was getting polluted and emanating foul smell ( <b>Exhibit No.16 (D)</b> ).	Yellareddy
7.	The existing dumpsite was only a temporary storage for MSW collected as the waste was being transferred to Jawaharnagar T&D facility (under GHMC).	Nagaram and Peerzadiguda

It could be observed from **Table-5.6** above that the location of dumpsites near to flood canals and Agricultural lands pose a grave threat to the surrounding environment, polluting water streams and water bodies. Besides, there is the possibility of leaching over a period of time.

<sup>146</sup> Bollaram, Chandur, Haliya, Kothagudem, Mahabubnagar, Nagaram, Peerzadiguda and Wardhannapet

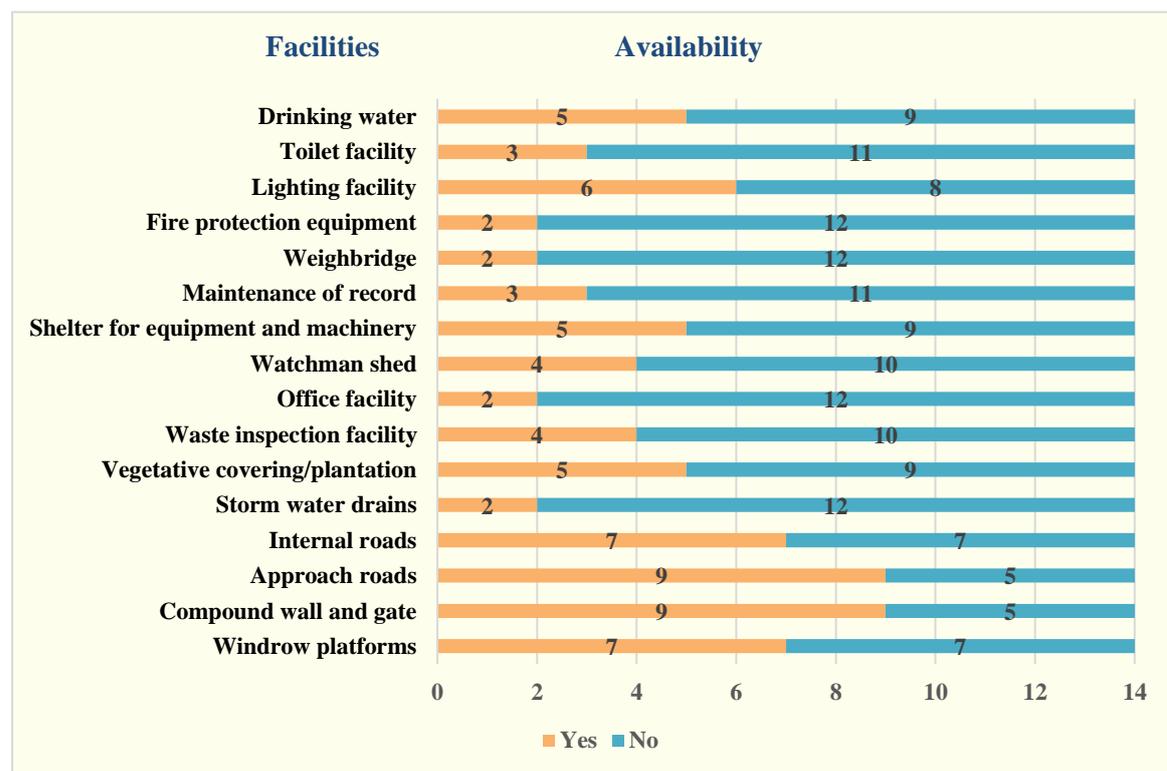
The State Government replied (November 2023) that-

- i. In Kothagudem ULB, remedial measures were taken and MSW would be transported to primary Dumping yard at Ramavaram to prevent possibility of mixed waste and rainwater getting mixed in canal and polluting the water stream.
- ii. In Yellareddy ULB, the MSW was dumped at Bathukamma Kunta (water body) by Somarpet (Village), GP and not by the ULB.

The reply indicated lack of monitoring by Yellareddy ULB within its limits regarding unauthorised dumping of MSW.

The status of the availability of basic facilities in the 14 dumpsites of the test-checked ULBs are depicted in **Chart-5.1**.

**Chart-5.1: Status of availability of basic facilities in the dumpsites of test-checked other 14 ULBs**



Source: Information furnished by the test-checked other 14 ULBs

It could be observed from **Chart-5.1**, that Weighbridges, Fire protection equipment, Office facility, storm water drains were not available in 12 dumpsites. Further, Compound Wall and gate were provided to dumpsites of nine ULBs<sup>147</sup> (**Exhibit No.16 (E)**) and not provided to dumpsites of five ULBs<sup>148</sup> (**Exhibit No.16 (F)**). Basic amenities like drinking water and toilets were not available in 9 and 11 dumpsites respectively<sup>149</sup>. These facilities are essential to maintain the dumpsites safely and effectively.

<sup>147</sup> Kalwakurthy, Khammam, Khanapur, Kothagudem, Mahabubnagar, Mancherial, Peerzadiguda, Yellareddy and Zaheerabad

<sup>148</sup> Bollaram, Chandur, Haliya, Nagaram and Wardhannapet

<sup>149</sup> **Drinking water:** Bollaram, Chandur, Haliya, Khammam, Khanapur, Mahabubnagar, Nagaram, Wardhannapet and Yellareddy. **Toilets:** Bollaram, Chandur, Haliya, Kalwakurthy, Khammam, Khanapur, Mancherial, Nagaram, Wardhannapet, Yellareddy and Zaheerabad

Burning of Solid Waste was not only a violation of SWM Rules but was also fraught with severe environmental and health hazards. National Green Tribunal (NGT) directed (December 2016) ULBs to implement complete prohibition on open burning of waste on lands, including at landfill sites and to penalise violators including ULBs responsible for such burning with an environmental compensation of ₹5,000 in case of simple burning and ₹25,000 in cases of burning of bulk waste.

In compliance to the NGT directions, the State Government issued orders (July 2017)<sup>150</sup> in this regard. However, JPV observations in **Table-5.6** indicated that four ULBs (Khanapur, Mahabubnagar, Mancherial and Nagaram) failed to comply with NGT directives and the State Government orders prohibiting burning of MSW.

**Exhibit No.14, Para 5.3.3/Table-5.6  
Dumping of mixed waste in the dumpsites**

	
<p><b>Chandur ULB (JPV dated 10 January 2023): Wet, dry and hazardous waste are dumped without segregation. Plastic waste was spread in large quantity without segregation</b></p>	<p><b>Haliya ULB (JPV dated 18 November 2022): Wet, dry and hazardous waste are dumped without segregation</b></p>
	
<p><b>Khammam ULB (JPV dated 20 March 2023): Wet and dry waste are dumped without segregation</b></p>	<p><b>Khanapur ULB (JPV dated 29 November 2022): Mixed MSW dumped in the dumpsite</b></p>

<sup>150</sup> G.O.Ms.No.27 dated 10 July 2017 of Environment, Forest, Science & Technology (For.III) Department

**Exhibit No.14, Para 5.3.3/Table-5.6  
Dumping of mixed waste in the dumpsites**

	
<p><b>Mancherial ULB (JPV dated 03 November 2022): MSW collected was dumped in the dumpsite without segregation</b></p>	<p><b>Peerzadiguda ULB (JPV dated 04 October 2022): MSW collected was dumped in the dumpsite without segregation</b></p>
	
<p><b>Wardhannapet ULB (JPV dated 26 October 2022): MSW collected was dumped in the dumpsite without segregation</b></p>	<p><b>Zaheerabad ULB (JPV dated 12 January 2023): MSW collected was dumped in the dumpsite without segregation</b></p>
	
<p><b>Mahabubnagar ULB (JPV dated 24 March 2023): Mixed waste dumped in dumpsite without segregation</b></p>	<p><b>Yellareddy ULB (JPV dated 19 October 2022): Mixed waste dumped without segregation</b></p>

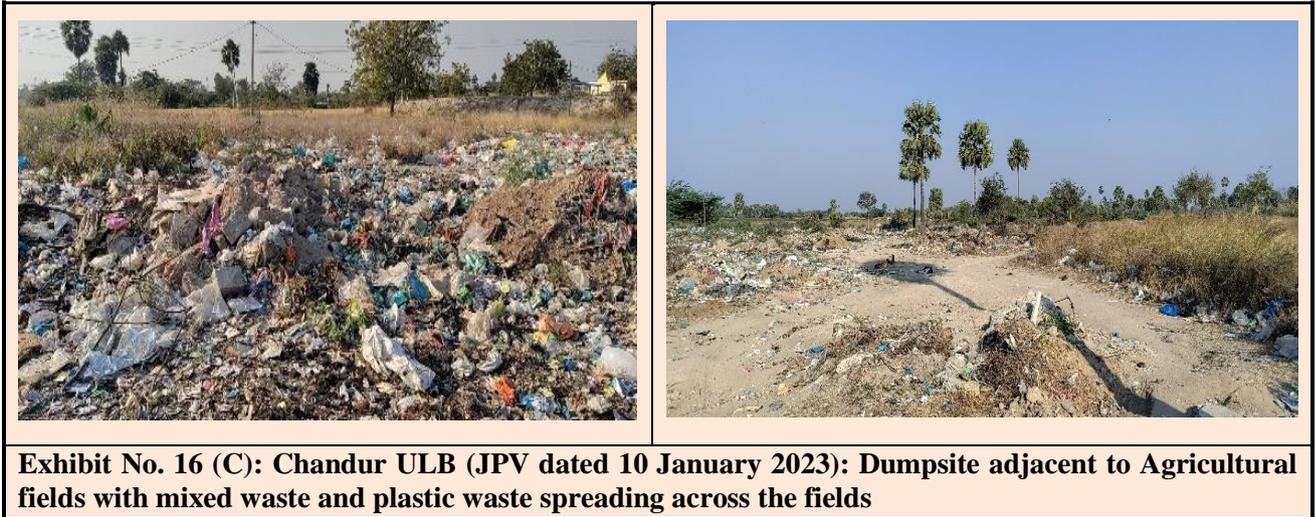
**Exhibit No.15, Para 5.3.3/Table-5.6  
Fire emanating from the MSW in the dumpsites**

	
<p><b>Khanapur ULB (JPV dated 29 November 2022): Fire emitting from the dumpsite</b></p>	<p><b>Mahabubnagar ULB (JPV dated 24 March 2023): Mixed waste dumped and smoke was emanating from the Garbage dump</b></p>
	
<p><b>Nagaram ULB (JPV dated 15 November 2022): Smoke was emanating from the Garbage dump</b></p>	<p><b>Mancherial ULB (JPV dated 03 November 2022): MSW was burnt at the site resulting in smoke and leading to air pollution</b></p>

**Exhibits: Para 5.3.3/Table-5.6  
Location of dumpsites adjacent to flood flow canal and Agriculture fields**

	
<p><b>Exhibit No. 16 (A): Haliya ULB (JPV dated 18 November 2022): A flood flow canal was adjacent to dumpsite</b></p>	<p><b>Exhibit No. 16 (B): Kothagudem ULB (JPV dated 20 December 2022): A canal adjacent to the dumpsite</b></p>

**Exhibits: Para 5.3.3/Table-5.6**  
**Location of dumpsites adjacent to flood flow canal and Agriculture fields**



**Exhibit No.16 (D), Para 5.3.3/Table-5.6**  
**Dumping of MSW in water body**



**Exhibit No.16 (E), Para 5.3.3**



**Exhibit No.16 (E), Para 5.3.3**



**Khanapur ULB Dumpsite with Compound walls (Dated 27 September 2024). Source: Provided by Khanapur ULB**

**Exhibit No.16 (F), Para 5.3.3**



**Nagaram ULB Dumpsite without Compound walls  
JPV dated 15 November 2022**

**Bollaram ULB Dumpsite without Compound walls  
JPV dated 15 December 2022**

**5.3.4 Reclamation and Capping of Solid Waste Dumpsites**

Section 4.5.7 of MSWM, Manual, 2016 (Part-II) stipulates that dumpsites<sup>151</sup> that do not have an engineered liner system, Leachate Collection System (LCS), or an appropriately designed cover system, should be immediately closed to minimise their impact on land, groundwater, and surface water quality and on air quality in the vicinity of the dumpsite.

Further, Rule 15(zj) of SWM Rules, 2016 mandates that local authorities should investigate and analyse all old open dumpsites and existing operational dumpsites for their potential of bio-mining<sup>152</sup> and bio-remediation<sup>153</sup> and wheresoever feasible, take necessary actions to bio-mine or bio-remediate the sites.

<sup>151</sup> A land utilised by local body for disposal of Solid Waste without following the principles of sanitary land filling

<sup>152</sup> Bio-mining (also referred as landfill mining) refers to the process of digging out the previously dumped/disposed of materials from a Landfill (open dumpsite) to recover metal, plastic, glass, combustibles, soil and other fine materials by segregating the prevailing waste into different constituents and converting the biodegradable portion into compost, methane gas or bio-diesel and the remaining non-recyclable plastic as refuse derived fuels, which in turn can be used as an alternate fuel in Industries

<sup>153</sup> Bioremediation is a biotechnical process, which abates or cleans up contamination. It is a type of waste management technique which involves the use of organisms to remove or utilise the pollutants from a polluted area.

**In GHMC:** As per the CA {Clause 2.1(i)}, the Concessionaire had to reclaim four dumpsites<sup>154</sup>. Audit observed that reclamation was done only in two sites at Fathullaguda and Jawaharnagar (*Para 2.1.1, Table-2.1, Sl.No.11 refers*) and the remaining two sites- Gandhamguda and Shamshiguda could not be reclaimed due to land title disputes. Thus, the objective of reclamation of the remaining two dumpsites could not be achieved even after more than 13 years of CA.

The State Government replied (September 2023) that Gandhamguda dumpsite reclamation could not be taken up due to the legal obstacles, whereas at Shamshiguda the land was already reclaimed and an animal care center was developed in the same site. However, documentary evidence for full reclamation of Shamshiguda site was not furnished to Audit.

**In test-checked other 14 ULBs:** Audit observed that there were old dumpsites in three ULBs (Kalwakurthy, Khammam and Kothagudem) and the following were noticed during JPV of the dumpsites of the three ULBs:

- The old dumpsite at Mallemadugu Village about 14 Km from Khammam ULB office, wherein MSW was dumped for a period of around four years up to 2021, but the legacy waste was left untreated (**Exhibit No.17 (A)**).
- The old dumpsite in Kothagudem located at Garimalapadu village was closed in December 2021 due to resistance from the villagers. The accumulated waste was spreading into adjoining places and roads. Further, the surrounding area was getting polluted with foul smell & dust from the dumped waste (**Exhibit No.17 (B)**).
- The old dumpsite in Kalwakurthy located at Raghupathipeta Road was abandoned (**Exhibit No.17 (C)**).

The State Government replied (November 2023) that in Kalwakurthy and Khammam ULBs, legacy waste in the old dumpsites was taken up for bioremediation and would be completed by December 2024. In Kothagudem ULB, the old dumpsite was closed and taken up for bioremediation.

Mahabubnagar ULB took up bio-mining work of legacy waste in July 2020 and scrutiny of records<sup>155</sup> to the extent produced to Audit, revealed that the Agency processed only 2,000 tonnes of legacy waste in 19 months against the estimated legacy waste of 1.5 to 2 lakh tonnes to be bio-mined as per the Agreement in 24 months. This indicated tardy progress in bio-mining of legacy waste in Mahabubnagar ULB. Further, no penalty clauses were incorporated in the Agreement for slow progress of work.

The State Government accepted the Audit observations and replied (November 2023) that delays in bio-mining of legacy waste were due to delayed installation of power supply, machinery, unfavourable seasonal behaviour and Covid-19 pandemic.

<sup>154</sup> Fathullaguda, Gandhamguda, Jawaharnagar and Shamshiguda

<sup>155</sup> (i) Agreement dated 02 July 2020, (ii) Note dated 23 July 2022 for payment of ₹15,51,269 for the bills submitted by the Agency till July 2022, (iii) Work Order dated 11 March 2019 issued to the Agency for the bio-mining work

**Exhibits: Para 5.3.4**  
**JPV observations on old dumpsites in test-checked ULBs**



**Exhibit No.17 (A): Khammam ULB (JPV dated 20 March 2023): Old dumpsite at Mallemadugu Village about 14 Km from Khammam ULB office, wherein MSW was dumped for a period of around four years up to 2021**



**Exhibit No.17 (B): Kothagudem ULB (JPV dated 20 December 2022): The old dumpsite was closed in December 2021 due to resistance from the villagers**



**Exhibit No.17 (C): Abandoned old dumpsite in Kalwakurthy ULB (JPV dated 21 October 2022)**

## 5.4 Good practices noticed

Good practices observed during JPV of Jawaharnagar T&D facility in GHMC are given in Box No.1.

### Box No.1

#### Good practices observed during JPV of Jawaharnagar T&D facility

Joint Physical Verification (JPV) was conducted on 18.01.2023 of the Jawaharnagar T&D facility maintained by Hyderabad Integrated Municipal Waste Ltd (HIMSW) which is the Special Purpose Vehicle (SPV) of M/s Ramky Enviro Engineers Ltd (now renamed as Re Sustainability Ltd), the Concessionaire for the IMSWM project of GHMC. The following were observed during the JPV:

- Weigh bridges are erected at the entrance of the T&D facility for weighing MSW both times at the time of entry and exit of the vehicle. MSW is dumped on tipping floor and one part is going to compost yard and one part is utilised for Waste to Energy Plant and the balance *i.e.*, inert waste is transferred to landfill.
- Legacy waste was Capped, and Leachate collection and its treatment was being done by the Concessionaire. Other facilities for processing of MSW *viz.*, Plastic recycling unit, Biogas plant, Refuse Derived Fuel (RDF) unit, Compost yard and the Waste to Energy Plant are operated and maintained (**Exhibit Nos.18 and 19**).
- The entire project area was covered with plantation and greenery. JCBs and machinery were used wherever required with less human intervention for handling MSW. The segregation was also done by machinery only. For reducing foul smell, odour maskants are sprayed through misting lines and drones. The entire T&D facility had internal roads.
- The various facilities established for processing MSW at Jawaharnagar T&D facility indicated Good practices followed in GHMC for processing & disposal of MSW.

**Exhibit No. 18, Box No.1, Para 5.4**  
**MSW processing facilities in Jawaharnagar T&D facility**

 <p>MSW Reception &amp; Weighment</p>	 <p>Pre-Segregation &amp; Sorting</p>	 <p>Windrow Composting</p>
 <p>Coarse Segregation</p>	 <p>Refinement Section</p>	 <p>RDF</p>
 <p>Laboratory (Waste Characterisation, Compost Quality etc.)</p>	 <p>Plastic Recycling</p>	 <p>Leachate Treatment Plant</p>
 <p>Bio-methanation Plant</p>	 <p>CBG Plant</p>	 <p>WtE Plant</p>

Source: Photos provided by GHMC during JPV conducted on 18 January 2023

**Exhibit No. 19, Box No.1, Para 5.4**  
**JPV of Jawaharnagar T&D facility (18 January 2023)**

 <p>Samsung Quad Camera 18.01.2023</p>	 <p>Samsung Quad Camera 18.01.2023</p>
<p><b>Administrative Building with Green cover</b></p>	<p><b>Green cover, internal roads and capped legacy MSW</b></p>
 <p>Samsung Quad Camera 18.01.2023</p>	 <p>Samsung Quad Camera 18.01.2023</p>
<p><b>Real time monitoring system at 24 MW WtE power plant</b></p>	<p><b>Segregation of MSW</b></p>
 <p>Samsung Quad Camera 18.01.2023</p>	 <p>Samsung Quad Camera 18.01.2023</p>
<p><b>Existing weigh bridge working on real time monitoring system</b></p>	<p><b>Compressed Bio-Gas chamber</b></p>
 <p>Samsung Quad Camera 18.01.2023</p>	 <p>Samsung Quad Camera 18.01.2023</p>
<p><b>24 MW Turbine</b></p>	<p><b>24 MW WtE plant</b></p>

Source: Photos taken during JPV conducted on 18 January 2023

## 5.5 Conclusion

The Concessionaire company did not create a special Fund for Environment protection measures with a capital cost of ₹34 crore and recurring cost of ₹12 lakh per annum, as per conditions set forth in the Environmental Clearance given by SEIAA for Waste to Energy plant. The State Government did not allocate suitable lands for establishment of landfill sites in the test-checked other 14 ULBs even after a lapse of more than five years of notification of the SWM Rules, 2016.

## 5.6 Recommendation

- *State Government should develop action plans for allocating suitable lands to ULBs for establishing sanitary landfill sites and also for setting up of MSW T&D facilities with necessary infrastructure.*