

3031

**BEFORE THE NATIONAL GREEN TRIBUNAL**  
**PRINCIPAL BENCH**  
**ORIGINAL APPLICATION NO. 606 OF 2018**

**IN THE MATTER OF: -**

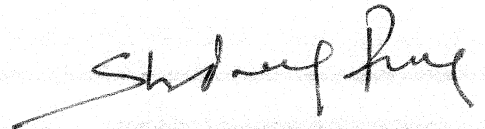
Compliance of Municipal Solid Waste Management Rules, 2016  
and other environmental issues

**INDEX**

| <b>SRL.<br/>NO.</b> | <b>PARTICULARS</b>  | <b>COPIES</b> | <b>COURT<br/>FEE</b> |
|---------------------|---|---------------|----------------------|
| <b>1</b>            | AFFIDAVIT IN COMPLIANCE OF ORDER<br>DT. 13.04.2026 ON BEHALF OF THE<br>RESPONDENT- STATE OF TRIPURA |               |                      |

**Filed on 06.07.2026**

**Filed by,**



**SHUVODEEP ROY**

Standing Counsel for State of Tripura  
SUPREME COURT OF INDIA  
Off. Add: 06, School Lane(GF) , Bengali Market,  
New Delhi – 110001  
Email:- standingcounseloffice@gmail.com

3032

**BEFORE THE NATIONAL GREEN TRIBUNAL  
PRINCIPAL BENCH  
ORIGINAL APPLICATION NO. 606 OF 2018**

**IN THE MATTER OF: -**

**Compliance of Municipal Solid Waste Management Rules, 2016  
and other environmental issues**

**AFFIDAVIT IN COMPLIANCE OF ORDER DT. 13.04.2026  
ON BEHALF OF THE RESPONDENT- STATE OF TRIPURA**

**ADVOCATE FOR THE RESPONDENT: SHUVODEEP ROY**

## INDEX

| <b>SRL. NO.</b> | <b>PARTICULARS</b>   | <b>Page Nos.</b> |
|-----------------|--|------------------|
| <b>1.</b>       | AFFIDAVIT IN COMPLIANCE OF ORDER DT. 13.04.2026 ON BEHALF OF THE RESPONDENT-STATE OF TRIPURA   | <b>1-3</b>       |
| <b>2.</b>       | <b>ANNEXURE – I</b><br>A True Copy of the Order dated 13.04.2026 passed by this Hon'ble Tribunal in the present case.  | <b>4-5</b>       |
| <b>3.</b>       | <b>ANNEXURE – II</b><br>A True Copy of the Action Taken Report by the Respondent-State of Tripura in compliance of the Order dated 13.04.2026 passed by this Hon'ble Tribunal. | <b>6-84</b>      |
| <b>4.</b>       | Proof of Service.  | <b>85</b>        |

Filed on 06.07.2026

3034

BEFORE THE NATIONAL GREEN TRIBUNAL

PRINCIPAL BENCH

ORIGINAL APPLICATION NO. 606 OF 2018

**IN THE MATTER OF: -**

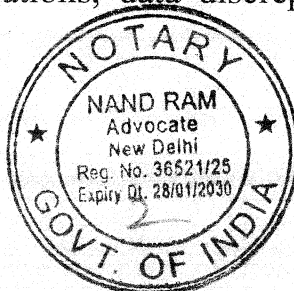
Compliance of Municipal Solid Waste Management Rules, 2016 and other  
environmental issues

**AFFIDAVIT IN COMPLIANCE OF ORDER DT. 13.04.2026**

**ON BEHALF OF THE RESPONDENT- STATE OF TRIPURA**

I, Sh. Ranjit Das TCS, aged 60 years, S/o Gopal Ch Das, Joint Resident Commissioner to the Government of Tripura, Tripura Bhawan, Kautilya Marg, Chankyapuri, New Delhi- 110 001, do hereby solemnly state and affirm as under: -

1. That the Deponent is the Joint Resident Commissioner to the Government of Tripura, Tripura Bhawan, Kautilya Marg, Chankyapuri, New Delhi- 110 001, and in course of discharge of his official duties, deponent has become conversant with the facts of the instant case and being duly authorized on this behalf by respondent-State, the deponent is fully competent to swear the present affidavit.
2. That vide Order dated 13.04.2026, this Hon'ble Tribunal had directed the Respondent-State of Tripura to file fresh Action Taken Report addressing the specific observations, data discrepancies, and environmental risks



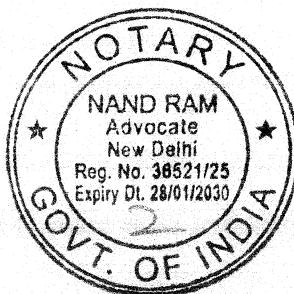
highlighted by this Hon'ble Tribunal regarding the state's solid waste and sewage management infrastructure.

A True Copy of the Order dated 13.04.2026 passed by this Hon'ble Tribunal in the present case is annexed herewith as **ANNEXURE-I** [Page No. 4 to 5].

3. That in compliance thereof, the present affidavit is being filed along with a detailed Action Taken Report consisting of three parts, namely- Annexure-A, containing the Compliance Report in respect of the directions issued by this Hon'ble Tribunal vide Order dated 16.09.2025; Annexure-B, containing the Action Taken Report in compliance with the directions dated 13.04.2026; and Annexure-C, containing the consolidated Action Taken Reports prepared in the formats prescribed vide Order dated 16.09.2025.

A True Copy of the Action Taken Report by the Respondent-State of Tripura in compliance of the Order dated 13.04.2026 passed by this Hon'ble Tribunal is annexed herewith as **ANNEXURE-II** [Page No. 6 to 84].

4. The Respondent – State of Tripura is making all sincere efforts to comply with directions passed by this Hon'ble Tribunal from time to time, and craves leave of this Hon'ble Tribunal to file further detailed affidavit, if required in the facts and circumstances of the present case.



3036

3

06/07/26

**DEPONENT**  
**RANJIT DAS, TCS**  
Joint Resident Commissioner  
Government of Tripura  
Tripura Bhawan, New Delhi

**VERIFICATION:**

I, the above-named deponent, do hereby verify that the contents of the above affidavit of mine are true and correct to the best of my knowledge. No part of it is false and nothing material has been concealed therefrom.

Verified at New Delhi on this 06 day of July, 2026.

06 JUL 2026

06/07/26

**DEPONENT**

**RANJIT DAS, TCS**  
Joint Resident Commissioner  
Government of Tripura  
Tripura Bhawan, New Delhi

Deepayan Dutta D/10888/2022

I Identified the deponent who has signed in my presence.



CERTIFIED THAT THE DEPONENT  
Sh/Smt/Km. Ranjit Das  
S/o, W/o, D/o TCS  
Identified by Shri/Smt. [Signature] has solemnly  
affirmed before me at Delhi on 06/07/26 Sl. No. 3036 that  
the content of the affidavit which have been read & explained  
to his/ her knowledge.  
(ATTESTED NOTARY PUBLIC, GOVT. OF INDIA)

**ATTESTED**

06 JUL 2026

2  
NAND RAM, ADV.  
NOTARY PUBLIC, DELHI  
GOVT. OF INDIA

Item No.36

Court No. 1

**BEFORE THE NATIONAL GREEN TRIBUNAL  
PRINCIPAL BENCH, NEW DELHI**

Original Application No. 606/2018  
(I.A. Nos. 20/2025, 539/2025 & 299/2024)  
**(In respect of State of Tripura)**

Compliance of Municipal Solid Waste Management Rules, 2016 and Other Environmental Issues.

Date of hearing: 13.04.2026

**CORAM: HON'BLE MR. JUSTICE PRAKASH SHRIVASTAVA, CHAIRPERSON  
HON'BLE DR. A. SENTHIL VEL, EXPERT MEMBER  
HON'BLE DR. AFROZ AHMAD, EXPERT MEMBER**

Applicant: Ms. Katyayni, Advocate (Amicus Curiae)

Respondents: Mr. Shuvodeep Roy & Mr. Deepayan Dutta, Advs. with Mr. Milind Ramtake (Through VC), Secy. of Urban Dev. Dept & Mr. Bishu Karmakar (Through VC), Member Secretary, Tripura PCB  
Mr. Saurabh Balwani, Advocate for CPCB (Through VC)

**ORDER**

1. The action taken report dated 07.04.2026 has been filed by the Chief Secretary, State of Tripura. A perusal of the said report reveals that the status of legacy waste is disclosed on page 2232 and for many of the ULBs such as Agartala, Teliamura, Ranirbazar etc., the legacy waste is shown to be zero but from the report it is inferred that the inert is going to dump site and no proper details in this regard have been disclosed.

2. The details concerning the remediation of the C&D waste have also not been placed on record, though it is stated that the construction of C&D waste treatment plant is in progress. It is also noticed that clarification is required in respect of the treatment of household bio-medical waste. The table on page 2225 concerning the daily generation and treatment of waste states that in all the 20 ULBs whatever waste is generated daily that is collected, transported and treated.

## 3038

3. Hence, we have serious doubts about the correctness of the table. The test analysis report on page 2383 discloses presence of chromium in the sample analysis of compost. Hence, its source should require to be disclosed. Similarly, on page 2364 the report discloses high mercury content which needs to be clarified. On page 2238, we have noticed two of the STPs are being constructed near the water body/on the flood plain of the river. Firstly, 5 MLD STP at Kalapania Khal and secondly, 8 MLD STP at Howrah River bank. Construction of STP near the water body and on the flood plain of river may lead to flooding of the STP and flowing of untreated sewage in the river during the monsoon. Hence, this aspect also needs to be clarified by the State of Tripura.

4. Mr. Milind Ramtake, Secretary of Urban Development Department appearing virtually has submitted that since he has joined recently, therefore, the report will be reexamined and fresh report will be submitted within six weeks.

5. List on 10.07.2026.

Prakash Shrivastava, CP

Dr. A. Senthil Vel, EM

Dr. Afroz Ahmad, EM

April 13, 2026  
Original Application No. 606/2018  
(I.A. Nos. 20/2025, 539/2025 & 299/2024)  
**(In respect of State of Tripura)**  
A



**3040**  
~~Annexure-A~~

**[Compliance of the Directions of Hon'ble National Green Tribunal in Order dated 16.09.2025 in  
OA No. 606 of 2018 in connection with implementation Solid Waste Management Rules and  
Sewage Management]**

**Date of previous hearing: 16-09-2025**

**ACTION TAKEN BY THE STATE IN COMPLIANCE WITH THE DIRECTION OF THE  
HON'BLE NATIONAL GREEN TRIBUNAL PRINCIPAL BENCH, NEW DELHI DATED 16-09-  
2025 IN THE MATTER OF OA NO. 606/2018**

---

**Action Point**

**[A] Solid Waste Management:**

**Action point I)**

We have observed that the 352.75 TPD of waste generated by 20 ULBs is being collected and transported to the processing sites. However, we do not find any statement regarding segregation of waste at the household level. Instead, mixed waste is transported and subsequently segregated in segregation sheds. Details of segregation at source and processing including final disposal be provided.

**Statement regarding source segregation of waste at the household level, processing and final disposal in earlier submitted report dated 11-09-2025:**

It is respectively submitted that the report dated 11.9.2025 filed by the Chief Secretary, Government of Tripura in the form of an Affidavit in Compliance of the Order Dated 12-12-2024 On Behalf of the Respondent State of Tripura **at page 1612** under para "Mechanism of waste collection and processing at the Waste Processing Facilities" **at point 1** clearly mentioned the following "*Door to door collection of segregated solid waste (Wet/Dry) with user charges is being implemented for households and other commercial establishments in all ULBs*".

Accordingly, details of processing including final disposal of waste was already provided in the earlier affidavit report dated 11-09-2025 (**paper book pagination 1612 to 1617**).

**Action taken report since previous hearing dated 16-09-2025:**

Since previous\_hearing all ULBs were instructed to further strengthen the solid waste processing in their respective ULBs by ensuring **segregation of waste (in Wet and Dry category) from the source of its generation i.e households, shops, commercial establishments etc. followed by transportation in segregated manner followed by processing and disposal.**

Accordingly, each ULB have submitted their compliance report which bears the declaration from their Chief Executive Officer/ Dy. Chief Executive Officer/ Executive Officer/ Dy. Executive Officer stating that **100% source segregation of waste at door-to-door level (in Wet and Dry category) have been accomplished across all their wards.** The signed compliance reports submitted by all the ULBs also

encloses the pictorial evidence of each stage of waste collection, transportation and processing / disposal. The ULB wise report is enclosed in **Annexure-1. (Affidavit filed on 07-04-2026 – Paper Book Pagination 2253-2443).**

ULBs are further directed to enhance the scope of segregation at four level (Dry, Wet, Special Category, including sanitary waste).

To ensure effective implementation of the four-way waste segregation at source, the Government of Tripura has also undertaken extensive capacity building and stakeholder sensitization. A State-level workshop was convened under the chairmanship of the **Hon'ble Chief Minister** on **22.06.2026** to disseminate the roles and responsibilities of elected representatives, Urban Local Bodies, District Administration and Civil Society Organizations. The workshop was attended by elected representatives, District Magistrates & Collectors, Presidents and Secretaries of Civil Society Organizations and other stakeholders.

Further, a series of review meetings and capacity-building programmes have been conducted under the chairmanship of the **Chief Secretary, Government of Tripura, Secretary, Urban Development Department, and Special Secretary, Urban Development Department** with the Municipal Commissioner, Chief Executive Officers/Executive Officers of all 20 Urban Local Bodies, Ward Councillors, Ward Secretaries, Sanitary Inspectors, Women Self Help Groups, sanitation workers and other stakeholders. Detailed instructions have been issued for implementation of the **four-way source segregation system (wet, dry, sanitary and special care waste)**, door-to-door collection, segregated transportation, processing, public awareness and enforcement. The Municipal Commissioner and Executive Officers have further been directed to disseminate these provisions at the ward level and ensure effective implementation through continuous awareness generation, monitoring and community participation. Door to door campaign is also under way where ward councillors are leading the awareness drive along with women self Help Group engaged for door-to-door waste collections.

*It is respectfully submitted that the Directorate of Urban Development has engaged a Third-Party Agency (CSIR-NEERI) on 26.03.2026 to verify the claims of ULB w.r.t segregation of waste at door-to-door level, segregated collection, segregated solid waste transportation and processing. The agency will conduct survey of all ULBs and submit their reports, gaps if any reported by the agency shall be mitigated immediately. The validated findings shall be placed before the Hon'ble Tribunal upon completion of the study.*

In addition to the third-party assessment, the State Government has established a multi-tier monitoring mechanism for implementation of the Solid Waste Management Rules, 2026. At the district level, implementation is monitored by the respective District Magistrates and Collectors. At the State level, periodic review is being undertaken by the **State Level Committee** chaired by the **Chief Secretary**. At the Urban Local Body level, ULB level committee along with Ward Committees, Ward Councillors designated as Lead Facilitators, and other field functionaries monitor implementation of source segregation, door-to-door collection, transportation and processing.

# 3042

## Action point II)

In Agartala, we find that 36 TPD of other recyclable waste, reported as being different from paper, plastics, glass, rags, and metals, has been disclosed. Therefore, the nature of this waste should be clarified.

## Action taken report since previous hearing dated 16-09-2025:

Agartala Municipal Corporation has provided a report against 36 TPD of other recyclable waste which is enclosed at **Annexure-2. (Affidavit filed on 07-04-2026 - Paper Book Pagination 2444-2446).**

## Action point III)

We have noted that 229,832 tons of legacy waste in 13 ULBs has been remediated reclaiming 15.42 acres of land. Further, it has been categorically stated that the remaining 7 ULBs, including Agartala, do not have legacy waste sites. Details of land recovered from clearing the legacy waste, including the geo codes of such site shall be provided.

## Action taken report since previous hearing dated 16-09-2025:

13 ULBs have submitted details of land recovered from clearing the legacy waste, including the geo codes of such site which is enclosed at **Annexure-3. (Affidavit filed on 07-04-2026 - Paper Book Pagination 2447-2493).**

It is respectfully submitted that all the 20 ULBs are not dumping fresh solid waste generated daily, instead they are processing their solid waste in their respective Composting/MRF processing facilities.

There is no legacy waste in any of the 20 ULBs.

The estimated inert waste generation in the State is approximately **36 TPD**, of which **24.8 TPD** is generated from Agartala Municipal Corporation and **10.46 TPD** from the remaining 19 ULBs. For scientific disposal of inert waste and processing rejects, the Government of Tripura has proposed **8 (eight) cluster-based Sanitary Landfill Facilities (SLFs)**, one in each district, under **Swachh Bharat Mission–Urban 2.0**. The proposal has been approved by the Ministry of Housing and Urban Affairs (MoHUA) and is awaiting release of funds. Pending operationalization of these facilities, targeted by **March 2028**, inert waste shall continue to be managed through the below mentioned interim arrangements.

Based on the available operational data from the Urban Local Bodies, the reported inert waste comprises both directly collected inert material and inert rejects generated after processing of municipal solid waste, including street sweepings, drain desilting residues, trommel rejects, ash, soil, dust, and other non-recoverable inert fractions. **At present, such inert waste is not disposed of through uncontrolled dumping. Instead, under the supervision of the respective ULBs and subject to technical feasibility, it is gainfully utilized for filling of low-lying areas, land levelling, internal road formation within waste processing facilities, and other municipal infrastructure works.** Where immediate utilization is not feasible, the inert waste is temporarily stored in designated areas within Material Recovery Facilities (MRFs) or other municipal processing premises. Such storage is only an interim arrangement and does not

constitute open dumping or creation of fresh legacy waste dumpsites.

The present system is transitional in nature, and the State remains committed to achieving full compliance with the Solid Waste Management Rules through the establishment of scientific sanitary landfill facilities and other planned waste management infrastructure.

### **Action point 6**

#### **Solid waste management in the State**

**In order to have consolidated status for assessing the gaps, we direct that further reports be submitted covering each ULB in the following formats;**

#### **Action taken report in form of consolidated reports as per formats provided in the Order dated 16-09-2025 .**

The status is provided in **Annexure: C**

[B] Sewage management:

#### **Action point I)**

**Estimated sewage generation is 82.4 MLD and existing sewage treatment facilities are operating with a capacity to treat 17.4 MLD, resulting in a gap of 65.0 MLD. Details of treatment and the proposal to provide sewage network and treatment facility by STP be provided.**

#### **Action taken report since previous hearing dated 16-09-2025:**

#### **Treatment details of operationalised STPs and In-Situ Nalla Treatment:**

Performance report of 8 MLD STP at Chandinamura in Agartala Municipal Corporation is enclosed in **Annexure- 4. (Affidavit filed on 07-04-2026 - Paper Book Pagination 2494-2505).**

Performance report of 8 MLD STP at Akhaura in Agartala Municipal Corporation is enclosed in **Annexure- 5. (Affidavit filed on 07-04-2026 - Paper Book Pagination 2506-2512).**

Performance report of In-Situ Nalla Treatment of Drains in Kamalpur Nagar Panchayat by CSIR-NEERI is enclosed in **Annexure-6.1. (Revised Certification by CSIR-NEERI).**

“It is submitted that both operationalized STPs are meeting CPCB/FC standards. The performance report of the 8 MLD STP at Chandanimura indicates BOD consistently below 8 mg/L, COD below 24 mg/L, and TSS within prescribed norms. Similarly, the 8 MLD STP at Akhaura ICP shows effluent quality meeting standards. Detailed test reports are annexed at **Annexures-4 & 5**. This demonstrates compliance with Hon’ble NGT’s directive regarding performance monitoring.”

#### **Sewage Network:**

A total of 103.6 Km of sewage network with 401 nos. household connection has been laid down only in the North Zone of Agartala Municipal Corporation the network connects to the operationalised 8 MLD STP at Chandanimura.

The 8 MLD operationalized STP at Akhaura and all the under construction STP in Agartala and under construction STPs in 11 ULBs are designed to be connected through Interception & Diversion of Drains.



## Detailed status of ongoing projects in Agartala MC

3045

5 STPs of total 39.5 MLD are being constructed in Agartala Municipal Corporation. The STPs which are being constructed in Agartala MC is based on SBR (Sequential Batch Reactor with disinfection) and MBBR (Moving Bed Biofilm Reactor with disinfection) technologies. These STP shall be connected through Interception and Diversion of drains.

I. **31.5 MLD** near Katakhal & Kalapania Khal in Agartala MC. Target completion date March 2027:

- a. 05 MLD STP at Joypur near Kalapania Khal,
- b. 10 MLD STP near Ranjit Nagar (Katakhal),
- c. 15 MLD STP near Abhaynagar Bridge (Katakhal),
- d. 1.5 MLD STP near Astabal Bridge (Katakhal),

**N.B:** As per the communication dated 22-05-2026 received from Agartala Smart City Ltd. the 5 MLD STP near Kalapania Khal does not fall in flood plain zone. It is to reiterate that I&D of the drains is a temporary measure till the conveyance system is laid.

Construction work of 4 (Four) STPs of total 31.5 MLD capacity is going on near Katakhal & Kalapania Khal in Agartala MC. Agency is M/s Swapan Ch. De, Central Road Extension, Town Pratapgarh, Agartala, West Tripura vide LoA No.4 (131)/2022/ 8831-41 dated 22-06-2023 has started work and is in various stages of construction progress. Target completion date –March, 2027. A copy of work order along with **treatment facility by STP** and construction progress photographs site wise is enclosed at **Annexure-7. (Affidavit filed on 07-04-2026 - Paper Book Pagination 2606-2641).**

II. **8 MLD** STP near the bank of Haora River in Agartala MC

Construction work of 8 MLD STP near Haora River bank is going on in Agartala MC. Agency is M/s. Sourabh Construction Pvt. Ltd. 108A, Friends Colony, Near M.M. Public School, Rajeev Nagar, Mandi Dabwali, Dist. Sirsa, Pin-125104, Haryana vide LoA No.F.4(158)/ASCL/STP/HWH/2024/2161-72 dated 28-04-2025. The construction work has started and is in various stages of construction. Target completion date – 31st May, 2027. A copy **treatment facility by STP** and construction progress photographs is enclosed at **Annexure-8. (Affidavit filed on 07-04-2026 - Paper Book Pagination 2642-2648).**

**N.B:** As per the communication dated 22-05-2026 received from Agartala Smart City Ltd. the 8 MLD STP near the bank of Haora River does not fall in flood plain zone. It is to reiterate that I&D of the drains is a temporary measure till the conveyance system is laid.

**The ongoing works to treat the sewage generation of 19 ULBs are as follows:**

1. Construction of **17.5 MLD STP in 11 ULBs**, refer **Table- 2 below**. The detailed design layout and approach and copy of work order is enclosed at **Annexure-9. (Affidavit filed on 07-04-2026 - Paper Book Pagination 2649-2669).**

**NB:** The STPs being constructed in these 11 ULBs are based on MBBR (Moving Bed Biofilm Reactor, with disinfection) technology. These STP shall be connected only through interception and diversion of drains.

The design, drawing and requirement of 11 STP along with their interception and diversion conveyance system has been prepared in accordance of CPHEEO guidelines and under the guidance and approval of MoHUA.

2. Construction of 10 MLD In-situ Nalla in 8 smaller ULBs and construction of 5 MLD Oxidation Pond in 2 ULBs refer Table-3 below. The detailed design layout, approach and copy of work order along with construction progress photographs is enclosed at Annexure-10. (Affidavit filed on 07-04-2026 - Paper Book Pagination 2670-2687).

**Table – 2 17.5 MLD STP in 11 ULBs**

| Sl. No.      | ULB Name       | Sewage Generation | Under construction STP Capacity | Target Completion date |
|--------------|----------------|-------------------|---------------------------------|------------------------|
|              |                | (In MLD)          | (In MLD)                        |                        |
| 1            | Dharmanagar MC | 3                 | 3                               | 31-01-2027             |
| 2            | Kailashahar MC | 1                 | 1.3                             | 31-10-2026             |
| 3            | Kumarghat MC   | 1                 | 1.2                             | 30-09-2026             |
| 4            | Ambassa MC     | 1                 | 1.3                             | 31-01-2027             |
| 5            | Khowai MC      | 1                 | 1.3                             | 28-02-2027             |
| 6            | Teliamura MC   | 1                 | 1.3                             | 31-12-2026             |
| 7            | Ranirbazar MC  | 1                 | 1.1                             | 30-06-2026             |
| 8            | Mohanpur MC    | 1                 | 1.3                             | 30-08-2026             |
| 9            | Melaghar MC    | 1                 | 1.1                             | 30-09-2026             |
| 10           | Udaipur MC     | 2                 | 3.5                             | 30-09-2026             |
| 11           | Belonia MC     | 1                 | 1.1                             | 30-11-2026             |
| <b>Total</b> |                | <b>14</b>         | <b>17.5</b>                     |                        |

**Table – 3 10 MLD In-situ Nalla Treatment in 8 ULBs and 5 MLD Oxidization Pond in 2 ULBs:**

| Sl. No.      | ULB Name       | Sewage Generation (In MLD) | Under construction In-situ Nalla Capacity (In MLD) | Target Completion date             | Under construction Oxidization Pond Capacity (In MLD) | Target Completion date |
|--------------|----------------|----------------------------|--|------------------------------------|---|------------------------|
| 1            | Panisagar NP   | 1                          | 1  | 30-09-2026                         | -   |                        |
| 2            | Kamalpur NP    | 1                          | 1.3  | 30-11-2026                         | 3   | 30-11-2026             |
| 3            | Jirania NP     | 1                          | 1.1  | Commissioned on 31-05-2026         | -   |                        |
| 4            | Bishalgarh MC  | 1                          | 2  | Partially Commissioned, 30-09-2026 | 2   | 30-09-2026             |
| 5            | Sonamura NP    | 1                          | 1.1  | 30-09-2026                         | -   |                        |
| 6            | Amarpur NP     | 1                          | 1.1  | 30-09-2026                         | -   |                        |
| 7            | Santirbazar MC | 1                          | 1.1  | Partially Commissioned, 30-09-2026 | -   |                        |
| 8            | Sabroom NP     | 0.4                        | 1.3  | Partially Commissioned, 15-09-2026 | -   |                        |
| <b>Total</b> |                | <b>7.4</b>                 | <b>10</b>  |                                    | <b>5</b>  |                        |

**Action point II)**

3047

We find from page 1621 that storm water drains are being tapped and taken to STPs which is not legal. If surface drains are used as open conduit, then storm water flows should have separate conveyance system. Sewage and storm water mixing particularly during monsoon will not only upset functioning of STP but, will also lead overflow of untreated sewage.

**Action taken report since previous hearing dated 16-09-2025:**

The design, drawing and requirement of 11 STP along with their interception and diversion of drains has been prepared in accordance of CPHEEO guidelines and under the guidance and approval of MoHUA.

Additionally, guidelines for preparation of DPRs for works of Interception and Diversion of drains and Sewage Treatment Plants has been published by National Mission for Clean Ganga Ministry of Water Resources, River Development &Ganga Rejuvenation Govt. Of India, New Delhi dated august 2018.

Minutes of the meeting with CPHEEO MoHUA dated 02-09-2022 along with I&D guidelines of by National Mission for Clean Ganga Ministry of Water Resources, River Development &Ganga Rejuvenation Govt. Of India is enclosed in **Annexure-11. (Affidavit filed on 07-04-2026 - Paper Book Pagination 2691-2813).**

**Response against “Time bound action plan to prevent sewage discharge into drain (10)” mentioned in the above table**

The State Government has initiated a time-bound action plan to eliminate the discharge of untreated sewage into drains and water bodies. The key interventions are as follows:

1. **State-wide Survey:** All Urban Local Bodies (ULBs) have been directed to conduct a comprehensive survey of household, public, and community toilets to identify sanitation systems lacking adequate sewage confinement measures such as soak pits. Copy enclosed at **Annexure-16 (Affidavit filed on 07-04-2026 - Paper Book Pagination 2929-2932).**
2. **Categorization of Sanitation Systems:** Based on the survey, toilets shall be classified as:
  - Septic tank with soak pit;
  - Septic tank without soak pit;
  - Septic tank connected to sewerage network;
  - Twin pit toilets;
  - Single pit toilets; and
  - Toilets discharging directly into drains/water bodies.
3. **Development of Shallow (Sub-surface) Sewerage Network:** The State proposes to develop underground sewerage infrastructure under the proposed **ADB-assisted project** with an estimated outlay of **₹1,200 crore (including State share)**. Approximately one-third of the project cost is proposed for laying shallow/sub-surface sewer pipelines to intercept sewage presently flowing into open drains. The project shall be implemented in a phased manner. The target for completion **by the year 2030.**

3048

4. **Construction of Soak Pits:** Toilets connected to septic tanks but lacking soak pits shall be identified, and soak pits will be constructed at State cost to prevent overflow into storm water drains and nearby water bodies.
5. **Community Sanitation Infrastructure:** In slum and high-density areas where individual soak pits or immediate sewer connectivity are not feasible, community septic tanks with soak pits shall be established to ensure safe decentralised sewage containment.
6. **Strengthening Septage Management:** Desludging capacity shall be augmented through additional manpower, equipment, and operational mechanisms. At least **one-third of all septic tanks shall be desludged annually**, and the collected septage shall be treated at the upcoming Sewage Treatment Plants (STPs) having co-treatment facilities.
7. **Groundwater Protection:** Periodic monitoring shall be undertaken to ensure that groundwater quality remains unaffected due to on-site sanitation systems.
8. CSIR-NEERI has already been engaged on 26-03-2026 for carrying out the said activities. The **copy of the work order is enclosed at Annexure-17. (Affidavit filed on 07-04-2026 - Paper Book Pagination 2933-2935).**
9. **Implementation Timeline:** The above interventions shall be implemented in a phased manner with a target for completion **by the year 2030**, thereby ensuring prevention of sewage discharge into drains and water bodies.

#### Action point III)

**From Annexure 10 A (page 2203), relating to the CTO granted for operation of STP, we find that standards prescribed are at variance with those directed in OA 1069/2018 by the Tribunal. Further, the mode of disposal of treated effluents is not specified.**

#### Action taken report since previous hearing dated 16-09-2025:

The Tripura State Pollution Control Board has issued a fresh Consent to Operate certificate (CTO) incorporating the standards as directed by the Hon'ble NGT in **OA 1069/2018** in favour of Agartala Smart City Limited for operation of 8 MLD STP at Akhaura ICP. A copy of CTO is enclosed at **Annexure-12. (Affidavit filed on 07-04-2026 - Paper Book Pagination 2814-2818).**

#### Action point IV)

**We also find from Table 7 (page 1622) that in Agartala, out of 61.0 MLD of sewage generation, existing treatment capacity of two STPs (8.0MLD × 2) is 16 MLD but their actual utilisation capacity has not been disclosed. We also find that, 1.4 MLD is treated in Nala by in-situ method but its performance, particularly with regard to the removal of fecal coliform, has not been disclosed. After the proposal to set up 39.5 MLD of treatment facilities, gap in Agartala may be 4.1 MLD (61.0 - 17.4 +39.5). The next report should disclose the utilisation capacity of existing STPs, and conveyance system of sewage to existing STPs (including new) STPs, and household connections. The details and the water quality after in-situ treatment shall be provided.**

**Action taken report since previous hearing dated 16-09-2025:**

**3049**

**Utilization details of operationalised STPs:**

- A.** Utilization report of 8 MLD STP at Chandinamura in Agartala Municipal Corporation is enclosed in **Annexure-4. (Affidavit filed on 07-04-2026 - Paper Book Pagination 2494-2505).**
- B.** Utilization report of 8 MLD STP at Akhaura in Agartala Municipal Corporation is enclosed in **Annexure-5. (Affidavit filed on 07-04-2026 - Paper Book Pagination 2506-2512).**

**Performance report of In-Situ Nalla particularly with regard to the removal of fecal coliform and details and the water quality after in-situ treatment:**

- A.** CSIR NEERI performance report of In-Situ Nalla Treatment of Drains in Kamalpur Nagar Panchayat along with the details and the water quality after in-situ treatment is enclosed in **Annexure-6. (Revised Certification by CSIR-NEERI).**
  - i.** Conveyance system to the existing 8 MLD STP at Chandanimura, Agartala is as follows:  
A total of 103.6 Km of sewage network with 401 nos. household connection has been laid down only in the North Zone of Agartala Municipal Corporation the network connects to the operationalized 8 MLD STP at Chandanimura. Additionally, 5 MLD was augmented to this STP through Interception and Diversion of drains (as a temporary measure till conveyance system are laid down).
  - ii.** Conveyance system to the existing 8 MLD STP at Akhaura and 5 nos. under construction STP at Agartala is designed to be connected through Interception & Diversion of Drains (as a temporary measure till conveyance system are laid down).
  - iii.** Conveyance system to the 11 under construction STPs in 11 ULBs are also designed to be connected through Interception & Diversion of Drains (as a temporary measure till conveyance system are laid down).

**C. After the proposal to set up 39.5 MLD of treatment facilities, gap in Agartala may be 4.1 MLD (61.0 - 17.4 +39.5):** Survey report of NEERI stating that no additional STP construction is required to address the gap of 4.1 MLD is enclosed in **Annexure-13 (Affidavit filed on 07-04-2026 - Paper Book Pagination 2819-2935).**

~~Annexure B~~  
~~3050~~

[Compliance of the Directions of Hon'ble National Green Tribunal in Order dated 16.09.2025 in OA No. 606 of 2018 in connection with implementation Solid Waste Management Rules and Sewage Management]

Date of previous hearing: 13-04-2026

**ACTION TAKEN BY THE STATE IN COMPLIANCE WITH THE DIRECTION OF THE HON'BLE NATIONAL GREEN TRIBUNAL PRINCIPAL BENCH, NEW DELHI DATED 13-04-2026 IN THE MATTER OF OA NO. 606/2018**

| Action Point No. | Action Point  | Response  |
|------------------|---|---|
| 1                | <p>The action taken report dated 07.04.2026 has been filed by the Chief Secretary, State of Tripura. A perusal of the said report reveals that the status of legacy waste is disclosed on page 2232 and for many of the ULBs such as Agartala, Teliamura, Ranirbazar etc., the legacy waste is shown to be zero but from the report it is inferred that the inert is going to dump site and no proper details in this regard have been disclosed.</p> | <p>Based on the available operational data from the Urban Local Bodies (ULBs), the reported inert waste comprises both directly collected inert material and inert rejects generated after processing of municipal solid waste, including street sweepings, drain desilting residues, trommel rejects, ash, soil, dust, and other non-recoverable inert fractions. At present, such inert waste is not disposed of through uncontrolled dumping. Instead, under the supervision of the respective ULBs and subject to technical feasibility, it is gainfully utilized for filling of low-lying areas, land levelling, internal road formation within waste processing facilities, and other municipal infrastructure works. Where immediate utilization is not feasible, the inert waste is temporarily stored in designated areas within Material Recovery Facilities (MRFs) or other municipal processing premises. Such storage is only an interim arrangement and does not constitute open dumping or creation of fresh legacy waste dumpsites.</p> <p>The estimated inert waste generation in the State is approximately <b>36 TPD</b>, of which <b>24.80 TPD</b> is generated from Agartala Municipal Corporation and <b>10.46 TPD</b> from the remaining 19 ULBs. For scientific disposal of inert waste and processing rejects, the Government of Tripura has proposed <b>8 (eight) cluster-based Sanitary Landfill Facilities (SLFs)</b>, one in each district, under <b>Swachh Bharat Mission–Urban 2.0</b>. The proposal has been approved by the Ministry of Housing and Urban Affairs (MoHUA) and is awaiting release of funds. Pending operationalization of these facilities, targeted by <b>March 2028</b>, inert waste shall continue to be managed through the above interim arrangements. The present system is transitional in nature, and the State remains committed to</p> |

|   |   |   |
|---|---|---|
|   |   | <p>achieving full compliance with the Solid Waste Management Rules through the establishment of scientific sanitary landfill facilities and other planned waste management infrastructure.</p>  |
| 2 | <p>The details concerning the remediation of the C&amp;D waste have also not been placed on record, though it is stated that the construction of C&amp;D waste treatment plant is in progress. It is also noticed that clarification is required in respect of the treatment of household bio-medical waste. The table on page 2225 concerning the daily generation and treatment of waste states that in all the 20 ULBs whatever waste is generated daily that is collected, transported and treated.</p> | <p><b>1. Construction &amp; Demolition (C&amp;D) Waste Management:</b></p> <p>With reference to the observations of the Hon'ble Tribunal regarding Construction &amp; Demolition (C&amp;D) waste management, it is respectfully submitted that the generation of C&amp;D waste in 19 ULBs of Tripura is comparatively low, except within Agartala Municipal Corporation where urbanization and infrastructure development activities are relatively higher. Presently, C&amp;D waste generated by the ULBs is collected by the municipal authorities or the waste generators and transported to designated municipal locations. The waste mainly comprises concrete, bricks, soil, sand, mortar, stone, tiles and other inert construction materials but not having paints, varnishes, drums and containers.</p> <p>Pending establishment of dedicated processing infrastructure, the collected C&amp;D waste is being beneficially utilized, wherever technically feasible, for filling of low-lying areas, land levelling, internal road construction, embankment strengthening and other municipal infrastructure works, thereby preventing indiscriminate dumping. Further, the ULBs of <b>Teliamura, Dharmanagar, Mohanpur and Udaipur</b> have initiated localized recycling of C&amp;D waste through Self Help Groups for manufacture of paver blocks and allied products.</p> <p>To strengthen scientific management, a <b>25 TPD Construction &amp; Demolition Waste Processing Facility</b> is under construction at <b>R.K. Nagar, Agartala</b> under the <b>Special Assistance to States for Capital Investment (SASCI)</b> Scheme and is targeted for commissioning by <b>December 2026</b>. The facility shall process construction debris into recycled aggregates, sub-base materials, paver blocks and other non-structural construction products in accordance with the Construction and Demolition Waste Management Rules, 2016.</p> <p>Additionally, district-level confined C&amp;D waste storage facilities with concrete flooring, boundary walls and GCI roofing have been approved under the SASCI Scheme (approximately <b>₹5.00 crore</b>) in the remaining seven districts to facilitate temporary storage prior to transportation to the processing facility at Agartala. Until commissioning of the facility, C&amp;D waste shall continue to be managed through beneficial reuse, localized recycling and storage at designated municipal locations.</p> <p>Further, the State has engaged <b>CSIR-National Environmental Engineering Research Institute (CSIR-NEERI)</b> to undertake</p> |

3052  
 a comprehensive State-level Solid Waste Management Study, which also includes assessment of existing and future C&D waste management requirements and recommendations for sustainable resource recovery and scientific disposal.

Photographs depicting the ongoing construction of the C&D Waste Processing Facility and existing C&D waste management practices are enclosed as **Annexure-I**.

## **2. Household Bio-Medical and Sanitary Waste Management**

Household bio-medical waste generated in urban areas primarily comprises sanitary napkins, diapers, masks, gloves, bandages, cotton, medicine wrappers and other domestic healthcare waste. The Urban Local Bodies are implementing phased measures for source segregation, safe collection, transportation and scientific disposal of such waste in accordance with the Solid Waste Management Rules and the guidelines issued by the Central Pollution Control Board (CPCB).

Through sustained IEC activities and door-to-door awareness campaigns, households are being encouraged to separately store sanitary and domestic healthcare waste in securely wrapped packets before handing them over to municipal collection personnel. Such waste is collected through the regular municipal door-to-door collection system, with separate handling wherever source segregation is practiced. To strengthen segregated collection, procurement of specialized four-compartment electric collection vehicles an amount of **Rs. 13 Cr. has been approved under the SASCI Scheme.**

At present, non-recyclable sanitary and household healthcare waste is managed through the authorized municipal solid waste management system, including RDF/co-processing arrangements. In addition, a **5 MT per day Common Bio-Medical Waste Treatment Facility (CBWTF)** is operational at Agartala.

To establish a dedicated treatment mechanism, the Directorate of Urban Development is in the process of executing a Memorandum of Understanding with the Health Department and **Medicare Environmental Management Private Limited**, the authorized operator of the CBWTF at Debendra Chandra Nagar, West Tripura, for systematic collection, transportation and treatment of household sanitary and domestic healthcare waste generated across all Urban Local Bodies. The institutional arrangement shall become effective immediately upon execution of the MoU, following which ULB-wise collection of sanitary waste shall commence. Simultaneously, awareness

3053  
 campaigns on separate storage of sanitary waste are being intensified, and the entire collection and treatment system is targeted to become fully operational by **December 2026**, after which such waste shall be scientifically treated at the CBWTF.

### **3. Verification of Waste Generation, Collection and Treatment Data**

The figures relating to daily waste generation, collection, transportation and treatment reported by the twenty Urban Local Bodies are based on available operational records, including weighbridge data (where available), vehicle trip records, ward-level collection registers, processing facility records and prescribed waste generation norms in ULBs where weighbridge facilities are not presently available. The reports have been duly authenticated by the respective Chief Executive Officers/Executive Officers and supported by documentary and photographic evidence.

For independent verification, the Directorate of Urban Development engaged **CSIR–National Environmental Engineering Research Institute (CSIR–NEERI)** on **26.03.2026** as an independent third-party technical agency to undertake a comprehensive State-wide assessment of municipal solid waste management. The study includes verification of actual waste generation, source segregation, collection efficiency, transportation systems, processing capacity, treatment performance and infrastructure gaps through field inspections, examination of operational records and physical verification. The validated findings shall be placed before the Hon'ble Tribunal upon completion of the study.

In addition to the third-party assessment, the State Government has established a multi-tier monitoring mechanism for implementation of the Solid Waste Management Rules, 2026. At the district level, implementation is monitored by the respective District Magistrates and Collectors. At the State level, periodic review is being undertaken by the **State Level Committee** chaired by the **Chief Secretary**. At the Urban Local Body level, ULB level committee along with Ward Committees, Ward Councillors designated as Lead Facilitators, and other field functionaries monitor implementation of source segregation, door-to-door collection, transportation and processing.

To ensure effective implementation of the Solid Waste Management Rules, 2026, the Government of Tripura has also undertaken extensive capacity building and stakeholder sensitization. A State-level workshop was convened under the chairmanship of the **Hon'ble Chief Minister** on **22.06.2026** to disseminate the roles and responsibilities of elected

|   |   |   |
|---|---|---|
|   |   | <p>representatives, Urban Local Bodies, District Administration and Civil Society Organizations under the Rules. The workshop was attended by elected representatives, District Magistrates &amp; Collectors, Presidents and Secretaries of Civil Society Organizations and other stakeholders.</p> <p>Further, a series of review meetings and capacity-building programmes have been conducted under the chairmanship of the <b>Chief Secretary, Government of Tripura, Secretary, Urban Development Department, and Special Secretary, Urban Development Department</b> with the Municipal Commissioner, Chief Executive Officers/Executive Officers of all 20 Urban Local Bodies, Ward Councillors, Ward Secretaries, Sanitary Inspectors, Women Self Help Groups, sanitation workers and other stakeholders. Detailed instructions have been issued for implementation of the <b>four-way source segregation system (wet, dry, sanitary and special care waste)</b>, door-to-door collection, segregated transportation, processing, public awareness and enforcement. The Municipal Commissioner and Executive Officers have further been directed to disseminate these provisions at the ward level and ensure effective implementation through continuous awareness generation, monitoring and community participation. Door to door campaign is also under way where ward councillors are leading the awareness drive along with women self Help Group engaged for door-to-door waste collections.</p> |
| 3 | <p>Hence, we have serious doubts about the correctness of the table. The test analysis report on page 2383 discloses presence of chromium in the sample analysis of compost. Hence, its source should require to be disclosed. Similarly, on page 2364 the report discloses high mercury content which needs to be clarified. On page 2238, we have noticed two of the STPs are being constructed near the water body/on the flood plain of the river. Firstly, 5 MLD STP at Kalapania Khal and secondly, 8 MLD STP at Haora River bank. Construction of STP near the water body and on the flood</p> | <p><b>1. Clarification regarding Presence of Chromium and Mercury in Compost:</b></p> <p>With reference to the observations of the Hon'ble Tribunal regarding the presence of Chromium and Mercury in the compost analysis reports, it is respectfully submitted that the compost samples referred to pertain to <b>Sabroom Nagar Panchayat</b> and <b>Santirbazar Municipal Council</b>. The reported concentrations of <b>Chromium and Mercury</b> are well within the permissible limits prescribed under the <b>Fertilizer Control Order (FCO), 1985</b>, as adopted under <b>Schedule III of the Solid Waste Management Rules, 2026</b>.</p> <p>Both Sabroom Nagar Panchayat and Santirbazar Municipal Council are small Urban Local Bodies having populations of less than 15,000 and do not have any significant industrial, commercial or other recognized sources that could contribute to contamination by Chromium or Mercury. Accordingly, the possibility of contamination from any identifiable external source is considered remote.</p> <p>However, in order to address the observations of the Hon'ble Tribunal and as a matter of abundant precaution, fresh samples</p>  |

**plain of river may lead to flooding of the STP and flowing of untreated sewage in the river during the monsoon, Hence, this aspect also needs to be clarified by the State of Tripura.**

of compost from the concerned facilities shall be collected and analysed through a recognized laboratory to verify the reported values and ascertain the source, if any. The findings of the re-analysis shall be placed before the Hon'ble Tribunal.

It is further submitted that utilization of compost produced from municipal solid waste processing facilities shall be undertaken strictly in accordance with the provisions and conditions prescribed under **Schedule III of the Solid Waste Management Rules, 2026**, including the applicable footnote relating to compost quality and utilization (*Compost final product exceeding FCO concentration limit shall be utilised for purposes other than growing food crops.*)

## **2. Justification for Location of Proposed Sewage Treatment Plants**

The proposed **5 MLD Sewage Treatment Plant (STP) near Kalapania Khal** and **8 MLD Sewage Treatment Plant (STP) near Haora River** have been planned considering the requirement for interception, diversion, conveyance, and treatment of sewage presently flowing through drains and outfalls discharging into nearby water bodies. The selected locations have been identified as technically suitable based on factors such as sewer network connectivity, hydraulic flow patterns, availability of land, topographical conditions, and minimization of pumping requirements. The projects are intended to substantially reduce the discharge of untreated sewage into natural water bodies and thereby improve the environmental quality of the respective catchment areas.

The proposed STP sites have been assessed with due consideration to local topography, drainage characteristics, flood vulnerability, and long-term operational requirements. Adequate environmental safeguards have been incorporated into the project design, and the facilities are being developed in compliance with applicable statutory provisions, environmental norms, and regulatory requirements.

It is further submitted that Agartala Municipal Corporation, being a densely populated urban area, faces significant constraints in the availability of suitable Government land for development of major urban infrastructure projects. In this context, extensive field surveys, technical investigations, hydraulic assessments, and evaluations of sewage interception feasibility were undertaken for identification of an appropriate site for the proposed 5 MLD STP near Kalapania Khal.

As no suitable Government/Khas land was available within the project influence area and along the proposed sewer alignment,

3056  
 the required land was acquired from private landowners through the prescribed legal process. The land is presently vested with and under the possession of Agartala Smart City Limited (ASCL), thereby ensuring clear land availability for implementation, operation, and long-term sustainability of the project.

Similarly, for the proposed 8 MLD STP near the Haora River, the selected site is situated on land belonging to Agartala Municipal Corporation (AMC). The site was finalized after resolution of long-standing encroachment issues and careful evaluation of its technical suitability for sewage interception and treatment. The proposed facility is expected to significantly reduce the discharge of untreated sewage into the Haora River system and contribute substantially towards improvement of water quality and environmental conditions within the urban catchment.

The selection of both STP locations has been guided by technical, environmental, and operational considerations with the objective of maximizing sewage capture efficiency, minimizing conveyance costs, and ensuring sustainable wastewater management for Agartala city.

The detailed technical justification for establishment of the **5 MLD STP near Kalapania Khal** and the **8 MLD STP near Haora River** is enclosed as **Annexure-II**.

As per the communication dated 22-05-2026 received from Agartala Smart City Ltd. Both the **8 MLD STP near the Haora River and the 5 MLD STP near Kalapania Khal does not fall in flood plain zone. It is to reiterate that I&D of the drains is a temporary measure till the conveyance system is laid.**

3057

**Annexure-C**

3058

## Solid waste management in the State

| Sl. No.   | (1) Name of ULBs | (2) Waste Generation (TDP) | (3) Composition of Waste |                 |              | (4) Waste Collected | (5) Waste transported | (6) Final destination of transported waste  |
|---|------------------|----------------------------|--------------------------|-----------------|--------------|---------------------|-----------------------|---|
|   |                  |                            | Biodegradable            | Dry/ Recyclable | Inerts       |                     |                       |   |
| 1   | Agartala MC      | 248.07                     | 136.44                   | 86.82           | 24.81        | 248.07              | 248.07                | D.C. Nagar - 250 TPD Solid Waste Processing Plant + 25 TPD MRF Centre - at Chandinamura |
| 2   | Dharmanagar MC   | 14.36                      | 7.90                     | 5.03            | 1.44         | 14.36               | 14.36                 | MRF and Waste to Compost Facility   |
| 3   | Kailashahar MC   | 7.00                       | 3.85                     | 2.45            | 0.70         | 7.00                | 7.00                  | MRF and Waste to Compost Facility   |
| 4   | Kumarghat MC     | 4.50                       | 2.48                     | 1.58            | 0.45         | 4.50                | 4.50                  | MRF and Waste to Compost Facility   |
| 5   | Ambassa MC       | 4.52                       | 2.49                     | 1.58            | 0.45         | 4.52                | 4.52                  | MRF and Waste to Compost Facility   |
| 6   | Khowai MC        | 6.91                       | 3.80                     | 2.42            | 0.69         | 6.91                | 6.91                  | MRF and Waste to Compost Facility   |
| 7   | Teliamura MC     | 7.50                       | 4.13                     | 2.63            | 0.75         | 7.50                | 7.50                  | MRF and Waste to Compost Facility   |
| 8   | Ranirbazar MC    | 5.10                       | 2.81                     | 1.79            | 0.51         | 5.10                | 5.10                  | MRF & Waste to Compost Centre.  |
| 9   | Mohanpur MC      | 5.63                       | 3.10                     | 1.97            | 0.56         | 5.63                | 5.63                  | MRF and Waste to Compost Facility   |
| 10  | Melaghar MC      | 5.71                       | 3.14                     | 2.00            | 0.57         | 5.71                | 5.71                  | MRF and Waste to Compost Facility   |
| 11  | Udaipur MC       | 9.40                       | 5.17                     | 3.29            | 0.94         | 9.40                | 9.40                  | MRF and Waste to Compost Facility   |
| 12  | Belonia MC       | 4.90                       | 2.70                     | 1.72            | 0.49         | 4.90                | 4.90                  | MRF and Waste to Compost Facility   |
| 13  | Amarpur NP       | 3.60                       | 1.98                     | 1.26            | 0.36         | 3.60                | 3.60                  | MRF and Waste to Compost Facility   |
| 14  | Bishalghar MC    | 6.80                       | 3.74                     | 2.38            | 0.68         | 6.80                | 6.80                  | D. C. Nagar Plant, Agartala, and decentralized compost pit at ward/market level.        |
| 15  | Jirania NP       | 3.92                       | 2.16                     | 1.37            | 0.39         | 3.92                | 3.92                  | MRF facility of Ranirbazar and ward/Market level Waste to Compost pits in Jirania       |
| 16  | Kamalpur NP      | 3.83                       | 2.11                     | 1.34            | 0.38         | 3.83                | 3.83                  | MRF and Waste to Compost Facility   |
| 17  | Panisagar NP     | 2.60                       | 1.43                     | 0.91            | 0.26         | 2.60                | 2.60                  | MRF and Waste to Compost Facility   |
| 18  | Sabroom NP       | 2.00                       | 1.10                     | 0.70            | 0.20         | 2.00                | 2.00                  | MRF and Waste to Compost Facility   |
| 19  | Santirbazar MC   | 3.28                       | 1.80                     | 1.15            | 0.33         | 3.28                | 3.28                  | MRF and Waste to Compost Facility   |
| 20  | Sonamura NP      | 3.10                       | 1.71                     | 1.09            | 0.31         | 3.10                | 3.10                  | MRF and Waste to Compost Facility   |
| <b>Total</b>  |                  | <b>352.73</b>              | <b>194.00</b>            | <b>123.46</b>   | <b>35.27</b> | <b>352.73</b>       | <b>352.73</b>         |   |
| <b>N.B : The MRF and Composting facility of each ULB are in the same location except for Agartala MC.</b> |                  |                            |                          |                 |              |                     |                       |   |
| <b>Waste generation is calculated based on per capita.</b>  |                  |                            |                          |                 |              |                     |                       |   |

The ULBs have provided the photographs which indicates collection, transportation and processing at respective MRFs and Composting plants. (Affidavit filed on 07-04-2026 - Paper Pook Pagation- 2254- 2443)

3059

## 7) Waste Processing - (A) 7.1) Composting

| Sl. No. | Name of ULBs   | a) Intake quantity (TPD) | b) Method adopted          | c) Output quantity as compost (TPD) | d) Quality  | e) Residue and rejects and management   | f) Utilization of compost   |
|---------|----------------|--------------------------|----------------------------|-------------------------------------|---|---|---|
| 1       | **Agartala MC  | 136.4                    | Windrow Composting         | 24.6                                | Complying FCO Standards – SWMR 2016<br>NABL Certified | Inerts/ rejects are utilized for filling up of identified low lying areas.<br><br>However further rejects and Inerts will go the SLFs | Self-utilized by ULB and given for free   |
| 2       | Dharmanagar MC | 7.90                     | Windrow and Pit Composting | 1.4                                 |   |   | Sold Locally & self-utilized  |
| 3       | Kailashahar MC | 3.85                     | Windrow and Pit Composting | 0.7                                 |   |   | Sell & self-utilized  |
| 4       | Kumarghat MC   | 2.48                     | Pit Composting             | 0.4                                 |   |   | Self-utilized by ULB and given for free   |
| 5       | Ambassa MC     | 2.49                     | Pit Composting             | 0.4                                 |   |   | Available for purchase to support revenue   |
| 6       | Khowai MC      | 3.80                     | Pit Composting             | 0.7                                 |   |   | Available for purchase to support revenue, to local farmers to promote organic farming.                                   |
| 7       | Teliamura MC   | 4.13                     | Pit Composting             | 0.7                                 |   |   | Self-utilized by ULB  |
| 8       | Ranirbazar MC  | 2.81                     | Pit Composting             | 0.5                                 |   |   | Available for purchase to support revenue, while also distributed at no cost to local farmers to promote organic farming. |
| 9       | Mohanpur MC    | 3.10                     | Pit Composting             | 0.6                                 |   |   | Available for purchase to support revenue, while also distributed at no cost to farmers to promote organic practices.     |
| 10      | Melaghar MC    | 3.14                     | Pit Composting             | 0.6                                 |   |   | Self-utilized by ULB and given for free   |
| 11      | Udaipur MC     | 5.17                     | Pit Composting             | 0.9                                 |   |   | Self-utilized by ULB and given for free   |
| 12      | Belonia MC     | 2.70                     | Pit Composting             | 0.5                                 |   |   | Sold locally  |
| 13      | Amarpur NP     | 1.98                     | Pit Composting             | 0.4                                 |   |   | Self-Utilized and sold locally  |

3060

|              |                  |               |                                     |             |   |   |
|--------------|------------------|---------------|-------------------------------------|-------------|---|---|
| 14           | ## Bishalghar MC | 3.74          | Composting                          | 0.7         | Complyin<br>g FCO<br>Standards<br>– SWMR<br>2016<br>NABL<br>Certified | Self-utilized   |
| 15           | Jirania NP       | 2.16          | Pit Composting                      | 0.4         |   | Self-utilized by ULB in gardening purpose, while also used in JNP Park nearby new Jirania NP office |
| 16           | Kamalpur NP      | 2.11          | Windrow Composting & Pit Composting | 0.4         |   | Sold locally & self-utilized  |
| 17           | Panisagar NP     | 1.43          | Windrow Composting & Pit Composting | 0.3         |   | ULB distributed for free  |
| 18           | Sabroom NP       | 1.10          | Pit Composting                      | 0.2         |   | Sold locally @Rs.25/-per packet of 2Kg under the brand "FENI"                                       |
| 19           | Santirbazar MC   | 1.80          | Pit Composting                      | 0.3         |   | Sold to local farmers   |
| 20           | Sonamura NP      | 1.71          | Pit Composting                      | 0.3         |   | Self-Utilized   |
| <b>Total</b> |                  | <b>194.00</b> |                                     | <b>35.0</b> |   |   |

**\*\* 136 TPD wet waste is Transported to the 250 TPD Integrated (MRF + Compost) Solid Waste Processing Plant at D.C. Nagar Agartala.**

**## Bishalgarh MC doesn't have Waste to compost plant at present. Wastes are being transported to D.C. Nagar Solid Waste Processing Plant of Agartala for further processing. However, some wet wastes are converted into compost through pit composting through the compost pit of 15 nos. at ward/market level.**

3061

## 7) Waste Processing - (B) 7.2) Refuse Derived Fuel

| Sl. No. | Name of ULBs   | Capacity of Plant  | Sources of Waste for Making RDF | RDF Produced | Residue/Reject Management | Utilization of RDF |
|---------|----------------|--|---------------------------------|--------------|---------------------------|--------------------|
| 1       | Agartala MC    | No separate RDF plant available. RDF is managed within the MRF | NA                              | NA           | NA                        | NA                 |
| 2       | Dharmanagar MC |  | NA                              | NA           | NA                        | NA                 |
| 3       | Kailashahar MC |  | NA                              | NA           | NA                        | NA                 |
| 4       | Kumarghat MC   |  | NA                              | NA           | NA                        | NA                 |
| 5       | Ambassa MC     |  | NA                              | NA           | NA                        | NA                 |
| 6       | Khowai MC      |  | NA                              | NA           | NA                        | NA                 |
| 7       | Teliamura MC   |  | NA                              | NA           | NA                        | NA                 |
| 8       | Ranirbazar MC  |  | NA                              | NA           | NA                        | NA                 |
| 9       | Mohanpur MC    |  | NA                              | NA           | NA                        | NA                 |
| 10      | Melaghar MC    |  | NA                              | NA           | NA                        | NA                 |
| 11      | Udaipur MC     |  | NA                              | NA           | NA                        | NA                 |
| 12      | Belonia        |  | NA                              | NA           | NA                        | NA                 |
| 13      | Amarpur NP     |  | NA                              | NA           | NA                        | NA                 |
| 14      | Bishalghar MC  |  | NA                              | NA           | NA                        | NA                 |
| 15      | Jirania NP     |  | NA                              | NA           | NA                        | NA                 |
| 16      | Kamalpur NP    |  | NA                              | NA           | NA                        | NA                 |
| 17      | Panisagar NP   |  | NA                              | NA           | NA                        | NA                 |
| 18      | Sabroom NP     |  | NA                              | NA           | NA                        | NA                 |
| 19      | Santirbazar MC |  | NA                              | NA           | NA                        | NA                 |
| 20      | Sonamura NP    |  | NA                              | NA           | NA                        | NA                 |

**N.B:** The RDF is generated from the MRF Plants – no specifically designed RFP plants installed.

3062

## 7) Waste Processing - (C) 7.3) Waste to Energy (Thermal / Methanation route)

| Sl. No. | Name of ULBs   | Plant Capacity | Daily Inputs of feed | Source of Waste | Output (Energy) | Residue/rejects Management | Fly ash and Bottom Ash management |
|---------|----------------|----------------|----------------------|-----------------|-----------------|----------------------------|-----------------------------------|
| 1       | Agartala MC    | NA             | NA                   | NA              | NA              | NA                         | NA                                |
| 2       | Dharmanagar MC | NA             | NA                   | NA              | NA              | NA                         | NA                                |
| 3       | Kailashahar MC | NA             | NA                   | NA              | NA              | NA                         | NA                                |
| 4       | Kumarghat MC   | NA             | NA                   | NA              | NA              | NA                         | NA                                |
| 5       | Ambassa MC     | NA             | NA                   | NA              | NA              | NA                         | NA                                |
| 6       | Khowai MC      | NA             | NA                   | NA              | NA              | NA                         | NA                                |
| 7       | Teliamura MC   | NA             | NA                   | NA              | NA              | NA                         | NA                                |
| 8       | Ranirbazar MC  | NA             | NA                   | NA              | NA              | NA                         | NA                                |
| 9       | Mohanpur MC    | NA             | NA                   | NA              | NA              | NA                         | NA                                |
| 10      | Melaghar MC    | NA             | NA                   | NA              | NA              | NA                         | NA                                |
| 11      | Udaipur MC     | NA             | NA                   | NA              | NA              | NA                         | NA                                |
| 12      | Belonia        | NA             | NA                   | NA              | NA              | NA                         | NA                                |
| 13      | Amarpur NP     | NA             | NA                   | NA              | NA              | NA                         | NA                                |
| 14      | Bishalghar MC  | NA             | NA                   | NA              | NA              | NA                         | NA                                |
| 15      | Jirania NP     | NA             | NA                   | NA              | NA              | NA                         | NA                                |
| 16      | Kamalpur NP    | NA             | NA                   | NA              | NA              | NA                         | NA                                |
| 17      | Panisagar NP   | NA             | NA                   | NA              | NA              | NA                         | NA                                |
| 18      | Sabroom NP     | NA             | NA                   | NA              | NA              | NA                         | NA                                |
| 19      | Santirbazar MC | NA             | NA                   | NA              | NA              | NA                         | NA                                |
| 20      | Sonamura NP    | NA             | NA                   | NA              | NA              | NA                         | NA                                |

**\*\* Considering the quantity of Dry and Burnable waste, options for setting a Waste to Energy (WTE - thermal route) plant is not technically feasible) With regard to Methanation route 160 TPD Bio-CNG is proposed to be constructed in Agartala with funding support from Oil India Limited. Target completion in 2 years i.e July 2028.**

**For remaining 19 ULBs setting up of plant under Methanation route is technically not feasible**

3063

| 7) Waste Processing - (D) 7.4) Other Processing - 250 TPD Integrated (MRF + Compost) Solid Waste Processing Plant at D.C. Nagar Agartala |  |                    |  |   |
|--|--|--------------------|--|---|
| Sl. No.  | Name of ULBs   | Quantity of inputs | Quality of Inputs                        | Products and its utilization                    |
| 1  | Agartala MC<br>(250 TPD Solid Waste Processing Plant at D.C. Nagar)                      | 228                | Segregated Wet +<br>Segregated Dry Waste | Compost +<br>Segregated<br>Dry waste and<br>RDF |
| 2  | Bishalghar MC<br>(Using neighbouring 250 TPD Solid Waste Processing Plant at D.C. Nagar) | 3.74               | Segregated Wet waste                     | Compost   |
|  |  | 2.38               | Segregated<br>Dry waste                  | Segregated<br>dry waste and<br>RDF              |

RDF: Is sent to Dalmia cement plant, Meghalaya.

Provision 11 of SWM Rules 2026 is followed pertaining to calorific value and intended use.

**N.B.:** The D.C. Nagar Integrated Solid Waste Processing Plant (MRF + Compost) was made operational in 2017 and was originally designed to process the entire solid waste generated by Agartala Municipal Corporation. However, the plant presently requires modernization to ensure smooth and efficient processing. Accordingly, an amount of ₹20 crore has been sanctioned from the ring-fenced account, and an additional ₹10 crore has been earmarked under SASCI. The funds will be utilized for the establishment of Material Recovery Facility (MRF) and composting facilities, along with modernization of the associated infrastructure.

| 7) Waste Processing - 3084 Other Processing – MRF |   |                    |                             |   |                              |
|---|---|--------------------|-----------------------------|---|------------------------------|
| Sl. No  | Name of ULBs  | Quantity of inputs | Quality of Inputs           | Products and its utilization  | Residue/Reject Management    |
| 1   | **Agartala MC<br>(25TPD MRF at Chandinamura)  | 20.00              | Segregate<br>d Dry<br>waste | Dry wastes are further segregated manually into various categories, bailed, cleaned and sold to registered recycler | RDF are sent to Cement Plant |
| 2   | Dharmanagar MC  | 5.03               |                             |   |                              |
| 3   | Kailashahar MC  | 2.45               |                             |   |                              |
| 4   | Kumarghat MC  | 1.58               |                             |   |                              |
| 5   | Ambassa MC  | 1.58               |                             |   |                              |
| 6   | Khowai MC   | 2.42               |                             |   |                              |
| 7   | Teliamura MC  | 2.63               |                             |   |                              |
| 8   | Ranirbazar MC   | 3.16               |                             |   |                              |
| 9   | Mohanpur MC   | 1.97               |                             |   |                              |
| 10  | Melaghar MC   | 2.00               |                             |   |                              |
| 11  | Udaipur MC  | 3.29               |                             |   |                              |
| 12  | Belonia MC  | 1.72               |                             |   |                              |
| 13  | Amarpur NP  | 1.26               |                             |   |                              |
| 14  | Jirania NP<br>(1.37 TPD segregated Dry waste is sent to neighbouring MRF of Ranirbazar MC,) | NA                 |                             |   |                              |
| 15  | Kamalpur NP   | 1.34               |                             |   |                              |
| 16  | Panisagar NP  | 0.91               |                             |   |                              |
| 17  | Sabroom NP  | 0.70               |                             |   |                              |
| 18  | Santirbazar MC  | 1.15               |                             |   |                              |
| 19  | Sonamura NP   | 1.09               |                             |   |                              |
| <b>Total</b>                                      |   | <b>54.28</b>       |                             |   |                              |

\*\* out of total 86.82 TPD Dry Waste generation of Agartala MC 20 TPD is treated in Chandinamuara MRF and remaining 66.82 TPD is sent to the 250 TPD Integrated (MRF + Compost) Solid Waste Processing Plant at D.C. Nagar Agartala

| 8. Gap in Waste generation and Processing    | Time bound plan to fill up the GAP |
|--|------------------------------------|
| NIL (State have surplus processing capacity) |                                    |

**N.B.** Solid Waste Generation of 20 ULBs is 352.7 TPD Processing Capacity of 20 ULBs is 537.1 TPD. There is no GAP in solid waste processing.

It is respectively submitted that the report dated 11.9.2025 filed by the Chief Secretary, Government of Tripura in the form of an Affidavit in Compliance of the Order Dated 12-12-2024 On Behalf of the Respondent State of Tripura at page 1610 under para “Table-3: ULB Wise Total Solid Waste Generation and Total Solid Waste Processing Capacity (In TPD)” declares that total solid waste processing capacity of state amounts to 537.1 TPD.

3065

| 9) Legacy Waste |                |                              |                                      |                                  |   |  |  |   |                             |   |
|-----------------|----------------|------------------------------|--------------------------------------|----------------------------------|---|--|--|---|-----------------------------|---|
| Sl. No.         | Name of ULBs   | No. of Legacy waste dumpsite | Quantity of Legacy Waste reported on | Present quantity of Legacy waste | Daily legacy waste being added as unprocessed waste | Quantification and utilization of out of Bio-Remediation and Bio-Minig |  |   |                             | Gap in Legacy Waste Remediation and Time bound Plan   |
|                 |                |                              |                                      |                                  |   | Digested Material (MT)   | Plastics (MT)  | Rubbers (MT)  | Inerts and others (MT)      |   |
| 1               | Agartala MC    | 0                            | 0                                    | 0                                | 0   | 0  | 0  | 0   | 0                           | Gap Nil<br>Daily fresh Solid Waste is processed in the solid waste processing facility/ Composting and MRF facilities.  |
| 2               | Dharmanagar MC | 1                            | 52215                                | 0                                | 0   | 24833.454 (good soil)  | 2140.815 (sent to cement factory)                            | 6422.45 (Mixed recyclables including rubber, glass, metal)  | INERT-4281.63, C&D-5137.956 | Gap Nil<br>The site is entirely remediated and no fresh waste is adding up. Daily fresh Solid Waste is processed in the Composting and MRF facilities.<br><b>(Affidavit filed on 07-04-2026 - Paper Book Pagination 2459-2463).</b> |
| 3               | Kailashahar MC | 1                            | 36510                                | 0                                | 0   | 17395.8 (good soil)  | 1630.93 (RDF which was transported to Dalmia Cement factory) | 4490.73 (mixed recyclables including rubber, glass, metals) | Inert-2693.82 C&D-3592.58   | Gap Nil<br>The site is entirely remediated and no fresh waste is adding up. Daily fresh Solid Waste is processed in the Composting and MRF facilities.<br><b>(Affidavit filed on 07-04-2026 - Paper Book Pagination 2464-2465).</b> |
| 4               | Kumarghat MC   | 1                            | 5248                                 | 0                                | 0   | 2463.33 (good soil)  | 118.23 (RDF are sent to cement factory)                      | 303.46 (Mixed recyclables including rubber, glass, metal)   | Inert-838.82, C&D-98.9      | Gap Nil<br>The site is entirely remediated and no fresh waste is adding up. Daily fresh Solid Waste is processed in the Composting and MRF facilities.  |

3066

|   |               |   |      |   |   |                         |  |   |                          |   |
|---|---------------|---|------|---|---|-------------------------|--|---|--------------------------|---|
|   |               |   |      |   |   |                         |  |   |                          | <b>(Affidavit filed on 07-04-2026 - Paper Book Pagination 2466-2469).</b>   |
| 5 | Ambassa MC    | 1 | 5399 | 0 | 0 | 2729.56<br>(Good Soil)  | 59.6<br>(RDF which was transported to Dalmia Cement factory) | 664.08<br>(mixed recyclables including rubber, glass, metals) | Inert-442.72, C&D-531.26 | Gap Nil<br>The site is entirely remediated and no fresh waste is adding up. Daily fresh Solid Waste is processed in the Composting and MRF facilities.<br><b>(Affidavit filed on 07-04-2026 - Paper Book Pagination 2451-2455).</b> |
| 6 | Khowai MC     | 1 | 9340 | 0 | 0 | 4768.604<br>(Good Soil) | 709.4  | 1148.82   | Inert-765.88 C&D-919.056 | Gap Nil<br>The site is entirely remediated and no fresh waste is adding up. Daily fresh Solid Waste is processed in the Composting and MRF facilities.<br><b>(Affidavit filed on 07-04-2026 - Paper Book Pagination 2481-2483).</b> |
| 7 | Teliamura MC  | 0 | 0    | 0 | 0 | 0                       | 0  | 0   | 0                        | Gap Nil<br>Daily fresh Solid Waste is processed in the solid waste processing facility/ Composting and MRF facilities.  |
| 8 | Ranirbazar MC | 0 | 0    | 0 | 0 | 0                       | 0  | 0   | 0                        | Gap Nil<br>Daily fresh Solid Waste is processed in the solid waste processing facility/ Composting and MRF facilities.  |
| 9 | Mohanpur MC   | 0 | 0    | 0 | 0 | 0                       | 0  | 0   | 0                        | Gap Nil<br>Daily fresh Solid Waste is processed in the solid waste  |

3067

|    |             |   |       |   |   |                         |   |  |                            |   |
|----|-------------|---|-------|---|---|-------------------------|---|--|----------------------------|---|
|    |             |   |       |   |   |                         |   |  |                            | processing facility/ Composting and MRF facilities.   |
| 10 | Melaghar MC | 1 | 11770 | 0 | 0 | 2282<br>(good soil)     | 2171<br>(RDF is sent to cement factory)                         | 264<br>(mixed recyclables including rubber, glass, metals)     | Inert-5372, C&D-688        | Gap Nil<br>The site is entirely remediated and no fresh waste is adding up. Daily fresh Solid Waste is processed in the Composting and MRF facilities.<br><b>(Affidavit filed on 07-04-2026 - Paper Book Pagination 2470-2472).</b> |
| 11 | Udaipur MC  | 1 | 25660 | 0 | 0 | 12203.89<br>(Good Soil) | 1052.06<br>(RDF which was transported to Dalmia Cement factory) | 3156.18<br>(mixed recyclables including rubber, glass, metals) | Inerts-2104.12 C&D-2524.94 | Gap Nil<br>The site is entirely remediated and no fresh waste is adding up. Daily fresh Solid Waste is processed in the Composting and MRF facilities.<br><b>(Affidavit filed on 07-04-2026 - Paper Book Pagination 2491-2493).</b> |
| 12 | Belonia     | 1 | 19706 | 0 | 0 | 5088<br>(good soil)     | 1245<br>(RDF which was transported to Dalmia Cement factory)    | 294<br>(mixed recyclables including rubber, glass, metals)     | Inert-8556, C&D-2793       | Gap Nil<br>The site is entirely remediated and no fresh waste is adding up. Daily fresh Solid Waste is processed in the Composting and MRF facilities.<br><b>(Affidavit filed on 07-04-2026 - Paper Book Pagination 2456-2458).</b> |
| 13 | Amarpur NP  | 1 | 15530 | 0 | 0 | 7818.5<br>(Good Soil)   | 485.77<br>(RDF which are transported to Dalmia cement factory)  | 1295.64<br>(mixed recyclables including rubber, glass, metals) | Inert-2996.66, C&D-298.78  | Gap Nil<br>The site is entirely remediated and no fresh waste is adding up. Daily fresh Solid Waste is processed in the Composting and MRF facilities.  |

3068

|    |               |   |       |   |   |   |   |   |                      |  |
|----|---------------|---|-------|---|---|---|---|---|----------------------|--|
|    |               |   |       |   |   |   |   |   |                      | <b>(Affidavit filed on 07-04-2026 - Paper Book Pagnation 2448-2450).</b>   |
| 14 | Bishalghar MC | 0 | 0     | 0 | 0 | 0   | 0   | 0   | 0                    | Gap Nil<br>Daily fresh Solid Waste is processed in the solid waste processing facility/ Composting and MRF facilities.   |
| 15 | Jirania NP    | 0 | 0     | 0 | 0 | 0   | 0   | 0   | 0                    | Gap Nil<br>Daily fresh Solid Waste is processed in the solid waste processing facility/ Composting and MRF facilities.   |
| 16 | Kamalpur NP   | 0 | 0     | 0 | 0 | 0   | 0   | 0   | 0                    | Gap Nil<br>Daily fresh Solid Waste is processed in the solid waste processing facility/ Composting and MRF facilities.   |
| 17 | Panisagar NP  | 1 | 3083  | 0 | 0 | 539<br>(Levelling of low-lying areas further used for plantation and pit filling) | 7<br>(Sent to Dalmia Cement Plant for Co-processing)  | 1758<br>(Further processed through an MRF and sold to authorized recyclers) | Inert-309, C&D 10    | Gap Nil<br>The site is entirely remediated and no fresh waste is adding up. Daily fresh Solid Waste is processed in the Composting and MRF facilities.<br><b>(Affidavit filed on 07-04-2026 - Paper Book Pagnation 2473-2477).</b> |
| 18 | Sabroom NP    | 1 | 12029 | 0 | 0 | 2594<br>(Bio soil)  | 677<br>(RDF are transported to Dalmia cement factory) | 281<br>(Mixed recyclables including rubber, glass, metals etc.)             | Inert-5498, C&D-1101 | Gap Nil<br>The site is entirely remediated and no fresh waste is adding up. Daily fresh Solid Waste is processed in the Composting and MRF facilities.<br><b>(Affidavit filed on 07-04-2026 - Paper Book Pagnation 2478-2480).</b> |
| 19 | Sonamura NP   | 1 | 24771 | 0 | 0 | 6532<br>(Bio soil)  | 1653<br>(RDF which)                                   | 495<br>(recyclable)   | Inert-9789,          | Gap Nil<br>The site is entirely remediated and   |

3069

|              |                |           |               |          |          |                     |   |   |   |   |
|--------------|----------------|-----------|---------------|----------|----------|---------------------|---|---|---|---|
|              |                |           |               |          |          |                     | was sent for energy recovery to the cement factory)         | mixed waste including glass, metal, rubber and plastic)   | C&D-1486                                    | no fresh waste is adding up. Daily fresh Solid Waste is processed in the Composting and MRF facilities.<br><b>(Affidavit filed on 07-04-2026 - Paper Book Pagination 2488-2490).</b>  |
| 20           | Santirbazar MC | 1         | 8571          | 0        | 0        | 5620.95 (Good Soil) | 193.85 (RDF which was transported to Dalmia Cement factory) | 275.9 (mixed recyclables including rubber, glass, metals) | Inert-562.9, C&D-267.2                      | Gap Nil<br>The site is entirely remediated and no fresh waste is adding up. Daily fresh Solid Waste is processed in the Composting and MRF facilities.<br><b>(Affidavit filed on 07-04-2026 - Paper Book Pagination 2484-2487).</b> |
| <b>Total</b> |                | <b>13</b> | <b>229832</b> | <b>0</b> | <b>0</b> | <b>94869.09</b>     | <b>12143.655</b>  | <b>20849.26</b>   | <b>Inert-42106.43<br/>C&amp;D-19448.672</b> |   |

**N.B:**

- The digested materials and inerts have been utilized for filling up of low-lying areas, construction of embankment of roads and for laying substrate layer for road construction. Plastic waste recovered were channelized to local Recyclers and sent to Dalmia Cement Plant, Meghalaya.
- The quantities shown above against each category dose not exists on the respective site it has been entirely remediated
- The data of remediation of 13 Legacy Dumpsite already submitted **(Affidavit filed on 07-04-2026 - Paper Book Pagination 2447-2493).**

# 3070

## Additional supplementary information:

- The D.C. Nagar Integrated Solid Waste Processing Plant (MRF + Compost), operational since 2017, requires modernization to improve processing efficiency. A total of ₹30 crore (₹20 crore from the ring-fenced account and ₹10 crore under SASCI) has been allocated for modernization, including upgrading the MRF, composting facilities, and associated infrastructure. The project is targeted for completion by **July 2028**.
- **160 TPD Bio-CNG is proposed to be constructed in Agartala with funding support from Oil India Limited. Target completion in 2 years i.e July 2028.**
- Enhancing waste segregation at four levels involving women SHG and awareness at corporators and citizen level.
- Functioning of Ward, ULB, District and State Level Committees for planning, implementation and monitoring.
- **8 (eight) cluster-based Sanitary Landfill Facilities (SLFs)**, one in each district, under **Swachh Bharat Mission–Urban 2.0**. The proposal has been approved by the Ministry of Housing and Urban Affairs (MoHUA) and is awaiting release of funds, targeted completion by **March 2028**
- Presently there is no gap in Solid Waste Processing in Tripura i.e. current generation 352.7 TPD and waste processing is also 352.75 TPD with surplus facility up to 537.1 TPD.
- **Ringfenced Fund details:** The State Government has prioritized Solid Waste and Sewage Management by ring-fencing ₹282.58 crore, maintained in a dedicated account (Tripura Gramin Bank, A/C No-8004010016746.) under the supervision of the Chief Secretary, Government of Tripura. The fund supports new and proposed projects to address infrastructure gaps, of which Rs. 44 crores approx. have been utilized for Solid Waste Management and Rs. 229 crores approx. have been utilised for sewage management to date. The balance funds amounting to Rs. 9 crores approx. have been earmarked for addressing operational issues of Solid and Sewage Management.

3071

## Consolidated Formats for Sewage Management in the State

| Details of Treatment Facility (Installed /under construction) | (A) Name of ULB | (B) Sewage Status Estimation and Measurement | (C) Sewage Conveyance/sewers                 |  |  |
|---|-----------------|--|--|--|--|
|   |                 |  | Total Sewage Generation per day (in MLD) (1) | Targeted Household to be connected to sewers (2) | House-holds connected (3)  |
| 8 MLD STP at Chandinamura (Installed)                         | Agartala MC     | 61   | 7511   | 4011 nos.  | Remaining 3500 nos. households will be connected to the sewer network by 2029.<br><br>Other households are directly not tapped, instead the drains are tapped through interception and diversion and connected to STP. |
| 8 MLD STP at Akhaura(Installed)                               | Agartala MC     |  | -  | -  | Households are directly not tapped. Instead drains are tapped through interception and diversion and connected to STP.   |
| 1.4 MLD In-Situ Nalla(Installed)                              | Agartala MC     |  | -  | -  |  |
| 8 MLD STP at Nagerjala on Haora(Under construction)           | Agartala MC     |  | -  | -  |  |
| 1.5 MLD STP near Astabal Bridge(Under construction)           | Agartala MC     |  | -  | -  |  |
| 15 MLD STP at Abhaynagar(Under construction)                  | Agartala MC     |  | -  | -  |  |
| 10 MLD STP at Ranjitnagar(Under construction)                 | Agartala MC     |  | -  | -  |  |

3072

|   |                |             |    |    |   |
|---|----------------|-------------|----|----|---|
| 5 MLD STP at Joypur(Under construction)                             | Agartala MC    |             | -  | -  |   |
| 3 MLD STP (Under construction)                                      | Dharmanagar MC | 3           | NA | NA | Households are directly not tapped. Instead drains are tapped through interception and diversion and connected to STP.  |
| 1.3 MLD STP(Under construction)                                     | Kailashahar MC | 1           | NA | NA |   |
| 1.1 MLD STP(Under construction)                                     | Kumarghat MC   | 1           | NA | NA |   |
| 1.3 MLD STP(Under construction)                                     | Ambassa MC     | 1           | NA | NA |   |
| 1.3 MLD STP(Under construction)                                     | Khowai MC      | 1           | NA | NA |   |
| 1.1 MLD STP(Under construction)                                     | Teliamura MC   | 1           | NA | NA |   |
| 1.1 MLD STP(Under construction)                                     | Ranirbazar MC  | 1           | NA | NA |   |
| 1.1 MLD STP(Under construction)                                     | Mohanpur MC    | 1           | NA | NA |   |
| 1.1 MLD STP(Under construction)                                     | Melaghar MC    | 1           | NA | NA |   |
| 3 MLD STP(Under construction)                                       | Udaipur MC     | 2           | NA | NA |   |
| 1.1 MLD STP(Under construction)                                     | Belonia MC     | 1           | NA | NA |   |
| 1.1 MLD In-situ Nalla (Under construction)                          | Amarpur NP     | 1           | NA | NA | Households are directly not tapped. Instead, nature based In-situ Nalla Treatment of drains are taken up in these 8 ULBs. Oxidation ponds by Intercepting and Diverting drains is being constructed in 2 ULBs |
| 2 MLD In-situ Nalla +2 MLD Oxidization Pond (Under construction)    | Bishalgarh MC  | 1           | NA | NA |   |
| 1.1 MLD In-situ Nalla (Under construction)                          | Jirania NP     | 1           | NA | NA |   |
| 1.3 MLD In-situ Nalla + 3 MLD Oxidization Pond (Under construction) | Kamalpur NP    | 1           | NA | NA |   |
| 1.3 MLD In-situ Nalla (Under construction)                          | Panisagar NP   | 1           | NA | NA |   |
| 1.3 MLD In-situ Nalla (Under construction)                          | Sabroom NP     | 0.4         | NA | NA |   |
| 1.3 MLD In-situ Nalla (Under construction)                          | Santirbazar MC | 1           | NA | NA |   |
| 1.3 MLD In-situ Nalla (Under construction)                          | Sonamura NP    | 1           | NA | NA |   |
| <b>Total</b>  |                | <b>82.4</b> |    |    |   |

**N.B.:**

- Utilizing ADB funds shallow sewer line planned for Agartala Municipal Corporation.
- Soak pits and community soak pits planned for 19 ULBs to locally confine black and grey waste to be saturated by 2030. Ground water pollution shall be prevented and monitored.

3073

## Sewage Management in the State

| Details of Treatment Facility (Installed /under construction) | (A) Name of ULB | (D) Drains   |                              |   |   |   |  |
|---|-----------------|--|------------------------------|---|---|---|--|
|   |                 | Sewage and Sullage flowing in open drains ( Storm water drains / concretised drains / unlined/katcha drains) (No. of drains) (5) | Flow in each drain (MLD) (6) | Quality / Characteristics of effluent (7)   | Quantity of industrial effluent discharged in drain (MLD) (8) | Final point of discharge of drain (MLD) (9) | Time bound action plan to prevent sewage discharge into drain (10) |
| 8 MLD STP at Chandinamura(Installed)                          | Agartala MC     | 9  | 0.45                         | Domestic sewage mixed with sullage, high BOD, COD, TSS. Value of BOD= 89.0 mg/l COD= 0.2 mg/l TSS=268.0mg/l | Nil   | Katakhal                                    | Action Plan is given below the table                               |
| 8 MLD STP at Akhaura(Installed)                               | Agartala MC     | 1  | 8                            | sewage mixed with sullage, BOD- 8.40, COD- 18.40, TSS- 3.80, pH- 6.95                                       | Nil   | Akhaura Canal                               |  |
| 1.4 MLD In-Situ Nalla(Installed)                              | Agartala MC     | 5  | 0.28                         | sewage mixed with sullage, BOD- 26, COD- 68, TSS- 4.2, pH- 7.14   |   | Haora River                                 |  |
| 8 MLD STP at Nagerjala on Haora(Under construction)           | Agartala MC     | 13   | 0.4-2.50                     | Domestic sewage mixed with sullage, high BOD, COD, TSS.   |   | Haora River                                 |  |
| 1.5 MLD STP near Astabal Bridge(Under construction)           | Agartala MC     | 2  | 0.23-1.27                    |   |   | Katakhal                                    |  |
| 15 MLD STP at Abhaynagar(Under construction)                  | Agartala MC     | 5  | 0.4 - 7.20                   |   | Katakhal  |   |  |

3074

|   |                |    |            |   |   |               |                                      |
|---|----------------|----|------------|---|---|---------------|--------------------------------------|
| 10 MLD STP at Ranjitnagar(Under construction)                       | Agartala MC    | 6  | 0.3 - 7.50 |   |   | Katakhal      |                                      |
| 5 MLD STP at Joypur(Under construction)                             | Agartala MC    | 1  | 5          |   |   | Kalapania     |                                      |
| 3 MLD STP (Under construction)                                      | Dharmanagar MC | 3  | 1          | Average value of sewage mixed with sullage, BOD- 172, COD- 357, TSS- 233, FC-5000, pH- 7<br><br><b>(Annexure-14)<br/>(Affidavit filed on 07-04-2026 - Paper Book Pagination 2912-2919).</b> | NA  | Juri River    | Action Plan is given below the table |
| 1.3 MLD STP(Under construction)                                     | Kailashahar MC | 2  | 0.65       |   | NA  | Manu River    |                                      |
| 1.1 MLD STP(Under construction)                                     | Kumarghat MC   | 3  | 0.37       |   | NA  | Manu River    |                                      |
| 1.3 MLD STP(Under construction)                                     | Ambassa MC     | 2  | 0.65       |   | NA  | Dhalai River  |                                      |
| 1.3 MLD STP(Under construction)                                     | Khowai MC      | 4  | 0.33       |   | NA  | Khowai River  |                                      |
| 1.1 MLD STP(Under construction)                                     | Teliamura MC   | 4  | 0.28       |   | NA  | Khowai River  |                                      |
| 1.1 MLD STP(Under construction)                                     | Ranirbazar MC  | 4  | 0.28       |   | NA  | Haora River   |                                      |
| 1.1 MLD STP(Under construction)                                     | Mohanpur MC    | 6  | 0.18       |   | NA  | Sonai River   |                                      |
| 1.1 MLD STP(Under construction)                                     | Melaghar MC    | 1  | 1.1        |   | NA  | Gomati River  |                                      |
| 3 MLD STP(Under construction)                                       | Udaipur MC     | 11 | 0.27       |   | NA  | Gomati River  |                                      |
| 1.1 MLD STP(Under construction)                                     | Belonia MC     | 2  | 0.55       |   | NA  | Muhuri River  |                                      |
| 1.1 MLD In-situ Nalla (Under construction)                          | Amarpur NP     | 3  | 0.36       |   | NA  | Gomati River  |                                      |
| 2 MLD In-situ Nalla +2 MLD Oxidization Pond (Under construction)    | Bishalgarh MC  | 5  | 0.2-0.4    |   | Average value of sewage mixed with sullage, BOD- 97, COD- 201, TSS- 240, FC-179, pH- 6.14<br><br><b>(Annexure- 15)<br/>(Affidavit filed on 07-04-2026 - Paper Book Pagination 2920-2928).</b> | NA            |                                      |
| 1.1 MLD In-situ Nalla (Under construction)                          | Jirania NP     | 3  | 0.36       | NA  |   | Haora River   |                                      |
| 1.3 MLD In-situ Nalla + 3 MLD Oxidization Pond (Under construction) | Kamalpur NP    | 2  | 0.5        | NA  |   | Dhalai River  |                                      |
| 1.3 MLD In-situ Nalla (Under construction)                          | Panisagar NP   | 1  | 1          | NA  |   | Juri River    |                                      |
| 1.3 MLD In-situ Nalla (Under construction)                          | Sabroom NP     | 3  | 0.43       | NA  |   | Feni River    |                                      |
| 1.3 MLD In-situ Nalla (Under construction)                          | Santirbazar MC | 4  | 0.25       | NA  |   | Lowgang River |                                      |
| 1.3 MLD In-situ Nalla (Under construction)                          | Sonamura NP    | 2  | 0.5        | NA  |   | Gomati River  |                                      |

3075

## Sewage Management in the State

| Details of Treatment Facility<br>(Installed /under construction) | (A) Name of<br>ULB | (E) Sewage treatment and Utilisation   |  |   |   |  |   |   |  |
|--|--------------------|--|--|---|---|--|---|---|--|
|  |                    | Installe<br>d<br>Treatm<br>ent<br>capaciti<br>es of<br>existing<br>STPs<br>(MLD)<br>(11) | Utilisatio<br>n<br>capacity<br>of<br>existing<br>STPs<br>(MLD)<br>(12) | Gap in<br>sewage<br>generat<br>ion<br>and<br>treatme<br>nt<br>(MLD)<br>(13) | Time bound<br>plan to set up<br>and<br>operationalis<br>e<br>STPs<br>(14) | Performance<br>of STPs with<br>reference to<br>Standards<br>(15)   | Final<br>point of<br>discharge<br>of<br>treated<br>effluent<br>(16) | Level of<br>Utilisation<br>of Treated<br>sewage<br>(17)   | Sludge generatio<br>n<br>and its<br>managem<br>ent<br>(18)   |
| 8 MLD STP at Chandinamura<br>(Installed)                         | Agartala MC        | 8  | 7.5  | NIL<br>(Consid<br>ering<br>seasona<br>l<br>variatio<br>n)                   | Operational   | BOD- <7,<br>COD- 19,<br>TSS- <3.6<br>pH- 7.1,  | Akhaurah<br>khal, near<br>ICP                                       | Most of the<br>treated<br>sewage is<br>utilized for<br>Sprinkling in<br>dust prone<br>roads,<br>construction<br>activity,<br>regular street<br>watering,<br>gardening,<br>roadside<br>plantation etc. | 0.30 CUM<br><br>Dewatered<br>Sludge<br>sent to<br>D.C Nagar<br>for further<br>processing               |
| 8 MLD STP at Akhaura (Installed)                                 | Agartala MC        | 8  | 8  | NIL   | Operational   | BOD- 8.40,<br>COD- 18.40,<br>TSS- 3.80<br>pH- 6.95,<br>Total<br>Coliform<br>Bacteria/100<br>ML- 42.0<br>MPN, Fecal<br>coliform | 90% of<br>effluent<br>discharge<br>to<br>Akhaura<br>Canal           | 10%   | (0.4 - 0.5)<br>CUM<br><br>Dewatered<br>sludge<br>sent to<br>D.C.<br>Nagar for<br>further<br>processing |

3076

|  |                |     |     |     |             | Bacteria/100 ML- 6.0 MPN             |   |  |  |
|--|----------------|-----|-----|-----|-------------|--------------------------------------|---|--|--|
| 1.4 MLD In-Situ Nalla(Installed)                       | Agartala MC    | 1.4 | 1.4 | Nil | Operational | BOD- 26, COD- 68, TSS- 4.2, pH- 7.14 | 100% of effluent discharge to Haora River | 0%   | (0.07 - 0.88) CUM<br>Dewatered sludge sent to D.C. Nagar for further processing              |
| 8 MLD STP at Nagerjala near Haora (Under construction) | Agartala MC    | 0   | N/A | 8   | 31-05-2027  | Work in progress                     | Haora River                               | N/A  | Dewatered sludge would be sent to D.C. Nagar for further processing                          |
| 1.5 MLD STP near Astabal Bridge(Under construction)    | Agartala MC    | 0   |     | 1.5 | 31-03-2026  |                                      | Katakhal                                  |  |  |
| 15 MLD STP at Abhaynagar(Under construction)           | Agartala MC    | 0   |     | 15  | 31-03-2026  |                                      | Katakhal                                  |  |  |
| 10 MLD STP at Ranjitnagar(Under construction)          | Agartala MC    | 0   |     | 10  | 31-03-2026  |                                      | Katakhal                                  |  |  |
| 5 MLD STP at Joypur(Under construction)                | Agartala MC    | 0   |     | 5   | 31-03-2026  |                                      | Katakhal                                  |  |  |
| 3 MLD STP (Under construction)                         | Dharmanagar MC | NA  | NA  | 3   | 31-01-2027  | Construction of STP Work in progress | Juri River                                | The maximum treated sewage will be used for greenbelt development, Sprinkling in dust prone roads, construction activity, regular street watering, | The generated sludge will be sent to the decentralised waste processing facility of the ULBs |
| 1.3 MLD STP(Under construction)                        | Kailashahar MC | NA  | NA  | 1   | 31-10-2026  |                                      | Manu River                                |  |  |
| 1.2 MLD STP (Under construction)                       | Kumarghat MC   | NA  | NA  | 1   | 30-09-2026  |                                      | Manu River                                |  |  |
| 1.3 MLD STP(Under construction)                        | Ambassa MC     | NA  | NA  | 1   | 31-01-2027  |                                      | Dhalai River                              |  |  |
| 1.3 MLD STP(Under construction)                        | Khowai MC      | NA  | NA  | 1   | 28-02-2027  |                                      | Khowai River                              |  |  |
| 1.3 MLD STP(Under construction)                        | Teliamura MC   | NA  | NA  | 1   | 31-12-2026  |                                      | Khowai River                              |  |  |
| 1.1 MLD STP(Under construction)                        | Ranirbazar MC  | NA  | NA  | 1   | 30-06-2026  |                                      | Haora River                               |  |  |

3077

|   |                |    |    |     |                          |   |               |                                     |
|---|----------------|----|----|-----|--------------------------|---|---------------|-------------------------------------|
| 1.3 MLD STP(Under construction)                                     | Mohanpur MC    | NA | NA | 1   | 30-08-2026               |   | Sonai River   | gardening, roadside plantation etc. |
| 1.1 MLD STP(Under construction)                                     | Melaghar MC    | NA | NA | 1   | 30-09-2026               |   | Gomati River  |                                     |
| 3.5 MLD STP(Under construction)                                     | Udaipur MC     | NA | NA | 2   | 30-09-2026               |   | Gomati River  |                                     |
| 1.1 MLD STP(Under construction)                                     | Belonia MC     | NA | NA | 1   | 30-11-2026               |   | Muhuri River  |                                     |
| 1.1 MLD In-situ Nalla (Under construction)                          | Amarpur NP     | NA | NA | 1   | 30-09-2026               | Construction of In-situ Nalla & Oxidation Pond work in progress | Gomati River  |                                     |
| 2 MLD In-situ Nalla +2 MLD Oxidization Pond (Under construction)    | Bishalgarh MC  | NA | NA | 1   | 30-09-2026               |   | Bijoy River   |                                     |
| 1.1 MLD In-situ Nalla (Under construction)                          | Jirania NP     | NA | NA | 1   | Commissioned, 31-05-2026 |   | Haora River   |                                     |
| 1.3 MLD In-situ Nalla + 3 MLD Oxidization Pond (Under construction) | Kamalpur NP    | NA | NA | 1   | 30-11-2026               |   | Dhalai River  |                                     |
| 1.3 MLD In-situ Nalla (Under construction)                          | Panisagar NP   | NA | NA | 1   | 30-09-2026               |   | Juri River    |                                     |
| 1.3 MLD In-situ Nalla (Under construction)                          | Sabroom NP     | NA | NA | 0.4 | 15-09-2026               |   | Feni River    |                                     |
| 1.3 MLD In-situ Nalla (Under construction)                          | Santirbazar MC | NA | NA | 1   | 30-09-2026               |   | Lowgang River |                                     |
| 1.3 MLD In-situ Nalla (Under construction)                          | Sonamura NP    | NA | NA | 1   | 30-09-2026               |   | Gomati River  |                                     |

### Sewage Generation of 20 ULBs - 82.4 MLD

#### A. Sewage Generation of Agartala – 61.4 MLD

- **Installed Capacity of Agartala- 17.4 MLD utilization 16.9**
- **Under construction 39.5, Target Completion by May 2027**
- **Addressing 4.1 MLD {61-(17.4 operationalised+39.5 under construction)} gap of Agartala - Survey report of NEERI stating that no additional STP construction is required to address the gap of 4.1 MLD is enclosed in Annexure-13 (Affidavit filed on 07-04-2026 - Paper Book Pagination 2819-2935).**

### **B. Sewage Generation of 19 ULBs – 21.4 MLD**

- **Under construction STP+ In-situ Nalla + Oxidation Pond 32.5 MLD**
- **Installed capacity (under construction) STP in 11 ULBs - 17.5 MLD, Target Completion by 30-06-2026 to 28-02-2027 in phased manner.**
- **Installed capacity 15 MLD (under construction) 10 MLD In-situ Nalla in 8 ULBs & 5 MLD Oxidation pond in 2 ULBs, Target Completion by 31-05-2026 to 30-11-2026 in phased manner.**

### **Response against “Time bound action plan to prevent sewage discharge into drain (10)” mentioned in the above table**

The State Government has initiated a time-bound action plan to eliminate the discharge of untreated sewage into drains and water bodies. The key interventions are as follows:

1. **State-wide Survey:** All Urban Local Bodies (ULBs) have been directed to conduct a comprehensive survey of household, public, and community toilets to identify sanitation systems lacking adequate sewage confinement measures such as soak pits. Copy enclosed at **Annexure-16 (Affidavit filed on 07-04-2026 - Paper Book Pagination 2929-2932)**.
2. **Development of Shallow (Sub-surface) Sewerage Network:** The State proposes to develop underground sewerage infrastructure under the proposed **ADB-assisted project** with an estimated outlay of **₹1,200 crore (including State share)**. Approximately one-third of the project cost is proposed for laying shallow/sub-surface sewer pipelines to intercept sewage presently flowing into open drains. The project shall be implemented in a phased manner. The target for completion **by the year 2030**.
3. **Construction of Soak Pits:** Toilets connected to septic tanks but lacking soak pits shall be identified, and soak pits will be constructed at State cost to prevent overflow into storm water drains and nearby water bodies. Due attention will be given, that no ground water contamination happens.
4. **Community Sanitation Infrastructure:** In slum and high-density areas where individual soak pits or immediate sewer connectivity are not feasible, community septic tanks with soak pits shall be established to ensure safe decentralised sewage containment.
5. **Strengthening Septage Management:** Desludging capacity shall be augmented through additional manpower, equipment, and operational mechanisms. At least **one-third of all septic tanks shall be deslugged annually**, and the collected septage shall be treated at the upcoming Sewage Treatment Plants (STPs) having co-treatment facilities.
6. **Groundwater Protection:** Periodic monitoring shall be undertaken to ensure that groundwater quality remains unaffected due to on-site sanitation systems.

7. CSIR-NEERI has already been engaged on 26-03-2026 for carrying out the said activities. The **copy of the work order is enclosed at Annexure-17. (Affidavit filed on 07-04-2026 - Paper Book Pagination 2933-2935).**
8. **Ringfenced Fund details: Ringfenced Fund details:** The State Government has prioritized Solid Waste and Sewage Management by ring-fencing ₹282.58 crore, maintained in a dedicated account (Tripura Gramin Bank, A/C No-8004010016746.) under the supervision of the Chief Secretary, Government of Tripura. The fund supports new and proposed projects to address infrastructure gaps, of which Rs. 44 crores approx. have been utilized for Solid Waste Management and Rs. 229 crores approx. have been utilised for sewage management to date. The balance funds amounting to Rs. 9 crores approx. have been earmarked for addressing operational issues of Solid and Sewage Management.
9. **Implementation Timeline:** The above interventions shall be implemented in a phased manner with a target for completion **by the year 2030**, thereby ensuring prevention of sewage discharge into drains and water bodies.

3080

**Action point:****[C] Ring Fence Account**

**It has been disclosed that out of Rs 282.58 crores of ring- fenced amount, an expenditure of Rs 252.3 crores has been incurred. Annexure 11 (page 2212) discloses fund allocation and expenditure incurred. The disclosure be made regarding the sustenance of facilities for sewage and solid waste management in terms of O&M and particularly, approach on used water management in Agartala and other ULBs.**

**We also direct that the monitoring mechanism disclosed on page 1629 be further strengthened, with ground-level monitoring in each ULB.**

**Action taken report since previous hearing dated 16-09-2025:**

- i. Operation and Maintenance for 11 under construction STP in 11 ULBs were included in the contract value hence 5 years O&M shall be borne by the construction agency. Site wise details are enclosed in **Annexure-18. (Affidavit filed on 07-04-2026 - Paper Book Pagination 2936-2941).****
- ii. Operation and Maintenance for 8 MLD STP at Akhaura, 4 nos. under construction STPs 31.5 MLD near Katakhal and Kalapania, 8 MLD STP over Haora and 1.4 MLD in-situ nalla treatment of drains flowing to river Haora in Agartala are enclosed in **Annexure-19. (Affidavit filed on 07-04-2026 - Paper Book Pagination 2942-2948).****
- iii. Operation and Maintenance of operationalised 8 MLD STP at Chandanimura is enclosed in **Annexure-20 (Affidavit filed on 07-04-2026 - Paper Book Pagination 2949-2951).****
- iv. Operation and Maintenance of various solid waste management assets are being mitigated utilising the Revenue Generation (through user charge collected from door-to-door waste collection, sale of recyclable, sale of compost etc.) Finance Commission -Tied Grants, ULBs other revenue source.**

The grass root level monitoring is being enforced by District Magistrate & Collectors through periodic review meetings under notified District Level Committee (DLC). Similarly, The Municipal Commissioner/Chief Executive Officers/Executive Officers of 20 ULBs review issues of the Solid and Liquid Waste Management each month under the notified ULB Level Committee (ULC). The Minutes of such meetings under both DLC & ULC are enclosed at **Annexure-21(Affidavit filed on 07-04-2026 - Paper Book Pagination 2952-2977)** and **Annexure-22. (Affidavit filed on 07-04-2026 - Paper Book Pagination 2978-3029).**

# **ANNEXURE- 6.1**

---

---

# Performance Evaluation of In-Situ Nallah Bioremediation in Kamalpur

---

---

Submitted for

Directorate of Urban Development  
Government of Tripura

By

CSIR-National Environmental Engineering Research

Institute (CSIR-NEERI)

Nagpur - 440 020



May 2026

*General M.*

## 3083

## Table of Contents

|   |                  |
|---|------------------|
| <b><u>1. INTRODUCTION</u></b>   | <b><u>3</u></b>  |
| 1.1 OBJECTIVES OF THE INSPECTION  | 4                |
| 1.2 DESCRIPTION OF THE INSTALLED TECHNOLOGY   | 5                |
| <b><u>2. TREATMENT PROCESS DESCRIPTION</u></b>  | <b><u>5</u></b>  |
| 2.1 PRIMARY TREATMENT-SCREENING SYSTEM:   | 5                |
| 2.2 SECONDARY TREATMENT-BIOLOGICAL AND FILTRATION PROCESSES                               | 6                |
| <b><u>3. BIOMATS AND BIOCURTAINS</u></b>  | <b><u>7</u></b>  |
| 3.1 PROVEN TREATMENT UNITS (PTU)  | 8                |
| 3.2 MICROBIAL TREATMENT AND OXYGEN ENHANCEMENT  | 8                |
| 3.3 FLORAFTS (ROOT-ZONE TREATMENT SYSTEM)   | 9                |
| 3.4 TERTIARY TREATMENT-DISINFECTION UNIT  | 10               |
| <b><u>4. FIELD OBSERVATIONS</u></b>   | <b><u>11</u></b> |
| 4.1 WATER QUALITY MONITORING AND TEST RESULTS   | 12               |
| 4.2 LABORATORY TEST RESULTS   | 12               |
| 4.3 INTERPRETATION OF RESULTS   | 13               |
| <b><u>5. TECHNICAL EVALUATION OF THE DECENTRALIZED IN-SITU DRAIN TREATMENT SYSTEM</u></b> | <b><u>15</u></b> |
| <b><u>6. RECOMMENDATIONS</u></b>  | <b><u>17</u></b> |
| <i>REGULAR OPERATION AND MAINTENANCE OF SCREENING UNITS</i>                               | 17               |
| <i>PERIODIC MAINTENANCE OF BIOLOGICAL TREATMENT COMPONENTS</i>                            | 17               |
| <i>MONITORING OF MICROBIAL TREATMENT AND AERATION</i>                                     | 18               |
| <i>MAINTENANCE OF FLORAFTS AND AQUATIC PLANTS</i>   | 18               |
| <i>PERIODIC WATER QUALITY MONITORING</i>  | 18               |
| <i>MANAGEMENT OF SEASONAL VARIATIONS AND FLOW CONDITIONS</i>                              | 19               |
| <i>INSTITUTIONAL MONITORING AND DOCUMENTATION</i>   | 19               |
| <i>FUTURE INTEGRATION WITH COMPREHENSIVE WASTEWATER MANAGEMENT</i>                        | 19               |
| <b><u>7. CONCLUSION</u></b>   | <b><u>20</u></b> |

## 1. Introduction

Rapid urbanization and population growth in many towns of Tripura have resulted in a significant increase in the generation of domestic wastewater. In the absence of comprehensive underground sewerage networks and centralized sewage treatment facilities, a large portion of this wastewater is discharged directly into open drains. These drains ultimately carry untreated sewage into nearby natural water bodies, leading to deterioration of water quality, ecological imbalance, and increased risks to public health. Untreated wastewater typically contains high concentrations of organic matter, suspended solids, nutrients, pathogens, and occasionally traces of industrial contaminants. The discharge of such polluted water into the environment can cause depletion of dissolved oxygen, foul odour, eutrophication, and contamination of downstream water resources.

Conventional sewage treatment plants (STPs) require significant capital investment, land availability, and supporting sewer infrastructure, which may not always be feasible for smaller towns and semi-urban areas. In such contexts, decentralized and in-situ wastewater treatment technologies are increasingly being explored as viable alternatives. These systems aim to treat wastewater directly within existing drain channels or at localized points, thereby reducing pollution loads before the wastewater reaches larger water bodies.

In this context, a decentralized in-situ drain treatment system has been installed in Drain-1 at Kamalpur in Dhalai District, Tripura. Technology integrates multiple treatment processes including physical screening, biological remediation, natural filtration, aeration, and root-zone treatment. The system is designed to improve the quality of drain water through a combination of microbial degradation, oxygen enhancement, and natural adsorption and filtration mechanisms. The treatment units installed within the drain include screening structures for removal of floating debris, biomats and biocurtains that support microbial biofilm development, filtration beds consisting of stones and coconut coir media, floating plant systems (florrafts) for nutrient uptake, and a final disinfection unit for pathogen removal.

The overall objective of this treatment intervention is to reduce key pollution indicators such as Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Total Suspended Solids (TSS), nutrients, and microbial contamination in drain water so that the treated effluent approaches the standards

prescribed under the Environment (Protection) Rules, 1986. The treatment approach emphasizes the use of natural biological processes and environmentally sustainable mechanisms to enhance the self-purification capacity of wastewater flowing through the drain.

In order to assess the effectiveness and operational status of the installed system, a field inspection and technical evaluation of the decentralized in-situ drain treatment facility at Drain-1, Kamalpur was carried out by the National Environmental Engineering Research Institute (NEERI). The inspection focused on examining the installation and functioning of different treatment components, observing the overall hydraulic and operational conditions of the system, and reviewing preliminary water quality characteristics of the drain.

This report presents the observations made during the field inspection, provides an overview of the treatment technology deployed at the site, and evaluates its potential effectiveness in improving drain water quality. The findings of the inspection are intended to assist Agartala Municipal Corporation in understanding the operational aspects of the system and in strengthening monitoring and maintenance practices for sustainable wastewater management.

## 1.1 Objectives of the Inspection

The primary objectives of the field inspection were:

1. To assess the operational status of the decentralized drain treatment system installed at Drain-1, Kamalpur.
2. To examine the performance of individual treatment components including Screens, Biomats, Treatment beds, Florafrafts, and Disinfection unit.
3. To evaluate the overall effectiveness of the treatment system in improving wastewater quality.
4. To review the monitoring mechanism and maintenance practices adopted at the site.
5. To provide technical observations and recommendations to Agartala Municipal Corporation for improving the efficiency and sustainability of the system.

## 1.2 Description of the Installed Technology

The installed treatment system follows a multi-stage treatment approach integrated directly within the drain channel.

The technology combines biological remediation, nano-bubble oxygenation, microbial activity, and natural filtration processes to improve water quality and reduce pollutant loads.

The system includes the following major components:

- Primary Screening Units
- Biomats and Biocurtains
- Proven Treatment Units (stone and coconut coir beds)
- Aeration and microbial dosing
- Florafits (root-zone treatment system)
- Disinfection unit

This arrangement allows wastewater to be treated gradually as it flows through the drain channel.

## 2. Treatment Process Description

The decentralized in-situ drain treatment system installed at Drain-1, Kamalpur has been designed to improve the quality of wastewater flowing through the drain using a combination of physical, biological, and natural treatment processes. The treatment units are arranged sequentially along the length of the drain so that wastewater undergoes gradual purification as it flows downstream.

The system integrates several treatment mechanisms including screening, microbial degradation, natural filtration, aeration, root-zone treatment, and final disinfection. Through these processes, the system aims to reduce organic pollutants, suspended solids, nutrients, and pathogenic microorganisms present in the wastewater.

### 2.1 Primary Treatment-Screening System:

The first stage of treatment consists of coarse and fine screening units installed at the upstream section of the drain. These screening structures function as the initial

## 3087

barrier for removing floating and suspended solid materials from the wastewater.

The coarse screens are designed to intercept larger debris such as plastics, cloth pieces, paper, leaves, and other floating waste materials commonly present in urban drains. Fine screens installed downstream of the coarse screens further capture smaller particles that may pass through the primary screening system.

This stage plays a crucial role in protecting the downstream treatment units by preventing clogging and accumulation of solid waste within the biological treatment components. Removal of large solids at the initial stage also improves the hydraulic efficiency of the treatment channel and ensures uninterrupted flow of wastewater through the subsequent treatment units. Proper functioning and regular cleaning of these screens are essential to maintain the efficiency of the entire treatment system.



*Plate 1: Primary Stage*

## 2.2 Secondary Treatment-Biological and Filtration Processes

Following the removal of large debris through the screening system, wastewater enters the secondary treatment zone, where biological and natural filtration processes are utilized to reduce organic pollutants and improve overall water quality. This stage consists of multiple treatment components including biomats,

biocurtains, filtration beds, microbial treatment systems, and root-zone treatment units. These components collectively promote the growth of beneficial microorganisms that degrade pollutants present in wastewater.



*Plate 2: Secondary Treatment-Biological*

### 3. Biomats and Biocurtains

Biomats and biocurtains are installed within the drain channel to facilitate the development of microbial biofilms. These structures are typically made of natural fibrous materials such as coconut coir, ropes, or similar media, which provide a large surface area for microbial attachment and growth.

Beneficial microorganisms present in wastewater colonize these surfaces and form biofilms. These microbial communities actively degrade organic pollutants through biological oxidation processes. The presence of biomats increases the contact time between wastewater and microbial populations, thereby enhancing the degradation of organic contaminants.

The biomats help in the decomposition of organic matter and contribute to the

reduction of key pollution indicators such as Biochemical Oxygen Demand (BOD) and Chemical Oxygen Demand (COD). Additionally, microbial activity within these structures assists in the transformation and partial removal of nutrients such as nitrogen and phosphorus.

The biocurtains installed across the flow path further improve treatment efficiency by increasing the retention time of wastewater and allowing better interaction between wastewater and microbial biofilms.

### 3.1 Proven Treatment Units (PTU)

Following the biomat zone, wastewater passes through Proven Treatment Units (PTUs) consisting of filtration beds filled with stones and coconut coir media. These filtration beds act as natural biofilters and play an important role in improving the quality of wastewater.

The stone media within these units provides a large surface area that supports the development of bacterial biofilms. These microorganisms facilitate biological oxidation of organic pollutants present in wastewater. At the same time, the interstitial spaces between the stones allow wastewater to flow gradually through the filtration bed.

As wastewater passes through these beds, suspended solids become trapped within the media layers while microbial communities degrade organic matter. Coconut coir within the treatment unit further enhances microbial activity and provides additional adsorption capacity for nutrients and certain dissolved pollutants.

Through a combination of biological degradation, adsorption, and filtration mechanisms, the PTU system contributes to the reduction of suspended solids, organic pollutants, and nutrients present in the wastewater.

### 3.2 Microbial Treatment and Oxygen Enhancement

The treatment system also incorporates microbial augmentation and oxygen enrichment mechanisms to accelerate the degradation of pollutants present in wastewater.

Specialized microbial cultures are introduced into the wastewater to enhance biological treatment efficiency. These microorganisms utilize organic pollutants as a food source and convert them into simpler and less harmful substances through metabolic processes.

## 3090

In addition to microbial dosing, mechanisms are employed to increase the dissolved oxygen (DO) concentration in the wastewater. Higher dissolved oxygen levels promote aerobic microbial activity, which is essential for efficient breakdown of organic matter.

Adequate oxygen availability helps in accelerating biodegradation processes, preventing the formation of anaerobic conditions that cause foul odours, and reducing sludge accumulation within the drain. Improved oxygen levels also enhance the self-purification capacity of the wastewater flowing through the treatment system.



*Plate 3: Aeration system*

### 3.3 Florafits (Root-Zone Treatment System)

In the downstream section of the treatment zone, floating plant systems known as florafits are installed to further improve water quality through natural ecological processes.

Florafits consist of buoyant platforms supporting aquatic plants whose roots extend into the wastewater. The root systems of these plants create a large surface area that supports microbial colonization and functions as a natural biofilter.

The root-zone treatment system assists in the removal of nutrients such as nitrogen and phosphorus, which are commonly present in domestic wastewater. Plant roots

## 3091

absorb these nutrients for growth, thereby reducing nutrient concentrations in the wastewater.

In addition, the root systems promote microbial activity that contributes to the degradation of organic matter. The combined effect of plant uptake and microbial degradation helps in improving water quality and reducing pollutant loads within the drain.



*Plate 4: Florrafts*

### 3.4 Tertiary Treatment-Disinfection Unit

The final stage of the treatment system involves disinfection of treated wastewater to remove pathogenic microorganisms before the water is discharged into downstream water bodies.

In the installed system, chlorination is used as the primary disinfection method. Chlorine acts as a strong oxidizing agent capable of destroying harmful microorganisms such as bacteria, viruses, and parasites present in wastewater.

The disinfection unit is generally installed at the downstream end of the treatment stretch to ensure that the treated water passes through the disinfection process before final discharge. This stage is essential to ensure that the treated effluent meets

environmental safety standards and reduces the risk of public health impacts associated with pathogen contamination.



*Plate 5: Disinfection stage*

Through the combined action of physical screening, biological treatment, natural filtration, plant-based nutrient removal, and final disinfection, the decentralized in-situ drain treatment system aims to significantly improve the quality of wastewater flowing through the drain before it enters natural water bodies.

## 4. Field Observations

During the site inspection at Drain-1, Kamalpur, the following observations were made:

1. The treatment units were installed along the length of the drain in sequential order, enabling progressive treatment of wastewater.
2. Screening structures were observed to be operational and intercepting floating waste effectively.
3. Biomats and coir-based structures were properly positioned within the drain channel and appeared conducive for microbial colonization.

# 3093

4. Proven Treatment Units containing stone and coir media were installed in series and were allowing continuous flow of wastewater through the treatment beds.
5. Florafts with aquatic plants were observed floating on the water surface and appeared to be in stable condition.
6. The disinfection system was installed near the downstream section of the treatment stretch.
7. Some accumulation of debris near upstream sections indicates the need for regular manual cleaning of screens.

## 4.1 Water Quality Monitoring and Test Results

To evaluate the performance of the decentralized in-situ drain treatment system at Drain-1, Kamalpur, water samples were collected and analyzed by the State Level Water Testing Laboratory, PWD (DWS), Government of Tripura under two distinct conditions, namely during the treatment phase and after a rainfall event. The sampling was carried out on 16 March 2026 from the stretch near the hospital, which represents a critical section of the treated drain. The analysis focused on key wastewater quality parameters such as Total Suspended Solids (TSS), Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), and Faecal Coliform, which are widely accepted indicators for assessing treatment efficiency and environmental compliance.

## 4.2 Laboratory Test Results

Water quality monitoring was carried out at different stages of treatment for the decentralized in-situ drain treatment system installed at Drain-1 near Hospital, Kamalpur. The analysis was conducted by the State Level Water Testing Laboratory, Government of Tripura and Ramkrishna Testing Laboratory & Consultancy for evaluating the variation in wastewater characteristics over the treatment period.

Comparative Water Quality Results for Drain-1, Kamalpur

| Parameter                                 | 0 Day (Raw Wastewater) | 7 Day (During Treatment) | 7 Day (After Rain) | 21 Days | 30 Days | 45 Days |
|---|------------------------|--------------------------|--------------------|---------|---------|---------|
| <b>Total Suspended Solids (mg/L)</b>      | 17.30                  | 12.6                     | 25.6               | 6.4     | 5.0     | 3.10    |
| <b>BOD (mg/L)</b>                         | 57.0                   | 38.0                     | 48.0               | 16.0    | 10.3    | 7.80    |
| <b>COD (mg/L)</b>                         | 182.0                  | 142.0                    | 165.0              | 65.0    | 40.0    | 24.0    |
| <b>Faecal Coliform (MPN/100 ml)</b>       | 15                     | 12                       | 14                 | 5       | 3       | 3       |
| <b>Total Nitrogen (mg/L as N)</b>         | 18.63                  | —                        | —                  | —       | 9.18    | —       |
| <b>Phosphate (mg/L as PO<sub>4</sub>)</b> | 10.20                  | —                        | —                  | —       | 4.32    | —       |

### 4.3 Interpretation of Results

The monitoring results indicate a progressive improvement in the quality of wastewater with increase in treatment duration. At the initial stage (0 Day), the wastewater exhibited comparatively higher concentrations of organic pollutants, suspended solids, nutrients, and microbial contamination, which is characteristic of untreated domestic sewage entering urban drains. The initial BOD and COD values of 57 mg/L and 182 mg/L respectively indicate the presence of substantial biodegradable and oxidizable organic matter in the drain water. Similarly, elevated nutrient concentrations in terms of Total

# 3095

Nitrogen and Phosphate suggest the contribution of domestic wastewater and organic discharges into the drain system.

After seven days of treatment, a reduction in TSS, COD, and faecal coliform levels was observed, indicating that the physical screening and biological treatment processes had started becoming effective. However, the BOD value remained comparatively high during this stage, suggesting that the biological degradation processes were still stabilizing. The sample collected after rainfall during the same period showed a temporary increase in TSS and BOD values, which can be attributed to stormwater runoff carrying additional suspended and organic matter into the drain and causing resuspension of settled solids.

A significant improvement in treatment efficiency was observed after 21 days of operation. The BOD concentration reduced to 16 mg/L and COD decreased to 65 mg/L, indicating substantial reduction of organic pollution through microbial degradation and aeration processes. Suspended solids and faecal coliform levels also showed considerable decline, reflecting improved filtration and microbial control within the treatment system.

The results obtained after 30 days further demonstrate enhanced treatment performance. The BOD and COD values reduced to 10.3 mg/L and 40 mg/L respectively, while TSS reduced to 5 mg/L. Nutrient concentrations also showed noticeable reduction, with Total Nitrogen decreasing from 18.63 mg/L to 9.18 mg/L and Phosphate reducing from 10.20 mg/L to 4.32 mg/L. This indicates that the treatment system is not only effective in reducing organic pollutants but also contributes towards nutrient removal through biological uptake and ecological treatment mechanisms.

The best performance was observed after 45 days of treatment, where the TSS, BOD, COD, and faecal coliform values were reduced to 3.10 mg/L, 7.80 mg/L, 24 mg/L, and 3 MPN/100 ml respectively. These values indicate substantial improvement in physicochemical and microbiological quality of the wastewater and demonstrate the effectiveness of the decentralized in-situ treatment system in improving drain water quality over time.

Overall, the monitoring results clearly indicate that the treatment efficiency improved progressively with stabilization of the biological treatment processes. The reduction in organic load, suspended solids, nutrients, and microbial contamination demonstrates the

effectiveness of the integrated treatment mechanisms including screening, biomats, filtration media, microbial degradation, and root-zone treatment. The temporary fluctuations observed after rainfall are typical for open drain-based systems and highlight the influence of hydraulic and environmental conditions on treatment performance.

## 5. Technical Evaluation of the Decentralized In-situ Drain Treatment System

The decentralized in-situ drain treatment system installed at **Drain-1 near Hospital, Kamalpur** has been designed as a nature-based wastewater treatment intervention for improving the quality of sewage flowing through the existing drainage channel. The system incorporates a combination of physical, biological, and ecological treatment mechanisms including screening arrangements, biomats, filtration media, microbial treatment, aeration, and root-zone treatment through floating vegetation. Based on the field observations and laboratory monitoring results obtained at different stages of operation, the system demonstrates progressive improvement in wastewater quality with increasing treatment duration.

The initial water quality analysis conducted prior to treatment indicated the presence of considerable organic and microbial pollution within the drain water. The raw wastewater sample showed BOD and COD concentrations of 57 mg/L and 182 mg/L respectively, along with elevated suspended solids, nutrient concentrations, and faecal coliform levels. These characteristics are typical of domestic sewage-contaminated urban drains and indicate the requirement of adequate treatment before discharge into downstream water bodies.

Following implementation of the treatment system, gradual reduction in pollution levels was observed over the monitoring period. During the initial seven days of operation, the treatment units showed moderate reduction in suspended solids and microbial contamination, while the BOD levels remained comparatively high. This indicates that the biological treatment processes were still under stabilization during the early phase of operation. The results obtained after rainfall during the same period showed temporary increase in TSS and BOD values due to inflow of stormwater runoff and resuspension of settled solids within the drain channel. Such

# 3097

variations are commonly observed in open drain-based treatment systems where hydraulic conditions fluctuate significantly during rainfall events.

A substantial improvement in treatment performance was observed after 21 days of operation. The BOD concentration reduced from 57 mg/L to 16 mg/L, while COD decreased from 182 mg/L to 65 mg/L. Suspended solids and faecal coliform levels also reduced considerably during this stage, indicating improved efficiency of biological degradation, filtration, and microbial control mechanisms operating within the treatment system.

Further improvement was observed after 30 days of treatment, where BOD and COD values reduced to 10.3 mg/L and 40 mg/L respectively. In addition to reduction of organic pollutants, noticeable decline in nutrient concentrations was also observed, with Total Nitrogen reducing from 18.63 mg/L to 9.18 mg/L and phosphate concentrations reducing from 10.20 mg/L to 4.32 mg/L. These observations indicate that the treatment system is also effective in nutrient reduction through biological uptake and ecological treatment processes associated with microbial activity and root-zone treatment mechanisms.

The best treatment efficiency was recorded after 45 days of operation. At this stage, the TSS, BOD, COD, and faecal coliform values reduced to 3.10 mg/L, 7.80 mg/L, 24 mg/L, and 3 MPN/100 ml respectively. These values indicate significant improvement in both physicochemical and microbiological quality of the wastewater and demonstrate stabilization of the biological treatment processes within the system. The results suggest that the integrated treatment mechanisms including biomats, filtration media, microbial degradation, aeration, and root-zone treatment are functioning effectively in reducing pollutant loads from the drain water.

From a technical perspective, the system demonstrates good performance in reducing suspended solids, organic pollution, nutrient concentrations, and microbial contamination under field conditions while handling approximately **1 MLD of wastewater flow** through the drain. The progressive improvement observed with increasing treatment duration indicates that the treatment efficiency is closely associated with stabilization of microbial activity and maturation of the biological treatment components.

However, the system performance is influenced by hydraulic and environmental factors such as rainfall, flow fluctuations, and inflow characteristics. The temporary deterioration in water

quality observed after rainfall indicates the impact of stormwater runoff and reduced hydraulic retention time within the treatment stretch. Therefore, regular maintenance of screening units, filtration media, biomats, and floating vegetation is essential to sustain treatment efficiency under varying operational conditions.

Overall, the decentralized in-situ drain treatment system at Drain-1, Kamalpur demonstrates the capability to function as an effective decentralized wastewater management solution for urban drains where conventional sewerage infrastructure is limited or unavailable. The monitoring results indicate that the system achieves substantial improvement in water quality over time and can contribute significantly towards reduction of pollution load entering downstream water bodies when supported with proper operation, maintenance, and periodic monitoring.

## 6. Recommendations

Based on the field inspection conducted at Drain-1, Kamalpur, and the laboratory test results obtained for key water quality parameters, the decentralized in-situ drain treatment system appears to be functioning satisfactorily under the present operating conditions. However, for ensuring sustained performance, long-term effectiveness, and environmental compliance, the following recommendations are suggested for consideration to Agartala Municipal Corporation (AMC) and the implementing agencies concerned.

### *Regular Operation and Maintenance of Screening Units*

The screening structures installed at the upstream section of the drain play a crucial role in preventing large debris and floating waste from entering the treatment zone. It is therefore essential that these screens are cleaned regularly to avoid blockage and accumulation of solid waste.

Municipal staff should ensure that the trapped solid waste is removed on a daily basis and transported to designated municipal solid waste disposal facilities. Proper maintenance of these screening units will help maintain uninterrupted flow within the drain and protect downstream treatment units from clogging.

### *Periodic Maintenance of Biological Treatment Components*

The biomats, biocurtains, and filtration beds consisting of stone and coconut coir

media serve as the primary biological treatment components of the system. Over time, accumulation of sludge or biofilm layers may reduce the permeability of the media and affect the hydraulic flow within the treatment units.

It is recommended that periodic inspection and cleaning of these treatment components be carried out, and the media should be replaced or regenerated when necessary. Maintaining adequate flow conditions and preventing excessive clogging will help sustain microbial activity and treatment efficiency.

#### *Monitoring of Microbial Treatment and Aeration*

The efficiency of biological treatment largely depends on the availability of sufficient dissolved oxygen and active microbial populations within the treatment system. Therefore, the microbial dosing schedule and aeration mechanisms should be monitored periodically to ensure that adequate oxygen levels are maintained in the wastewater.

If required, additional aeration support or adjustment of microbial dosing frequency may be undertaken depending on the pollutant load and flow conditions within the drain.

#### *Maintenance of Florafloats and Aquatic Plants*

The floating plant systems (florafloats) installed within the treatment zone contribute to nutrient uptake and provide additional surfaces for microbial growth. However, excessive plant growth may obstruct water flow or reduce oxygen transfer within the drain.

It is therefore recommended that periodic trimming and removal of excess plant biomass be undertaken to maintain the effectiveness of the root-zone treatment system. Replacement of damaged or deteriorated plant units should also be carried out when necessary.

#### *Periodic Water Quality Monitoring*

Regular monitoring of water quality is essential to assess the long-term performance of the decentralized treatment system. It is recommended that water samples be collected at regular intervals (preferably monthly or quarterly) from the upstream and downstream sections of the treatment stretch.

The monitoring program should include analysis of important parameters such as:

- Biochemical Oxygen Demand (BOD)

# 3100

- Chemical Oxygen Demand (COD)
- Total Suspended Solids (TSS)
- Nutrients (Nitrogen and Phosphorus)
- Faecal Coliform and other microbial indicators

Regular monitoring will help evaluate the treatment efficiency and ensure compliance with applicable environmental standards.

### *Management of Seasonal Variations and Flow Conditions*

The performance of in-situ drain treatment systems may be influenced by seasonal variations, particularly during periods of heavy rainfall or high inflow conditions, which may reduce the hydraulic retention time within the treatment units.

During such conditions, it is recommended that additional inspection and maintenance activities be undertaken to ensure that treatment components remain functional and free from excessive debris accumulation.

### *Institutional Monitoring and Documentation*

To ensure sustainable operation of the system, it is advisable that a structured operation and maintenance protocol be developed by the municipal authorities. This protocol should include:

- routine inspection schedules
- cleaning and maintenance procedures
- water quality monitoring plans
- documentation of operational records

Proper documentation and record keeping will enable authorities to track the performance of the system and implement corrective measures when required.

### *Future Integration with Comprehensive Wastewater Management*

While decentralized in-situ drain treatment systems can significantly improve the quality of wastewater within existing drainage networks, they should ideally be considered as supplementary or interim solutions. In the long term, development of comprehensive sewerage networks and centralized sewage treatment facilities may further enhance wastewater management in urban areas. Integration of decentralized

treatment approaches with broader urban wastewater management strategies can contribute to improved environmental protection and sustainable water resource management.

Overall, with regular maintenance, systematic monitoring, and institutional oversight, the decentralized in-situ drain treatment system installed at Drain-1, Kamalpur has the potential to contribute effectively towards improving drain water quality and reducing pollution loads entering downstream water bodies.

## 7. Conclusion

The decentralized in-situ drain treatment system implemented at Drain-1 near Hospital, Kamalpur demonstrates the potential of nature-based and low-energy wastewater treatment approaches for improving the quality of sewage flowing through urban drains. The system, designed to handle approximately 1 MLD of wastewater, incorporates physical screening, biomedea-based treatment, microbial degradation, filtration, aeration, and root-zone treatment processes for reducing pollutant load within the drain. The water quality monitoring results obtained at different stages of operation indicate progressive improvement in treatment efficiency with increasing operational duration. Significant reduction was observed in parameters such as Total Suspended Solids (TSS), Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), nutrient concentrations, and faecal coliform levels, indicating stabilization of biological treatment processes and effective functioning of the integrated treatment components.

The monitoring results also indicate that system performance is influenced by external environmental conditions such as rainfall and hydraulic fluctuations, which are typical for open drain-based treatment systems. Temporary increase in pollutant concentrations after rainfall highlights the importance of regular maintenance, proper hydraulic management, and continuous monitoring to sustain treatment efficiency under varying field conditions. Overall, the treatment system has demonstrated its capability to substantially improve wastewater quality prior to discharge into downstream water bodies and may serve as a practical decentralized wastewater management solution for urban areas lacking comprehensive sewerage infrastructure, provided that proper operation and maintenance practices are maintained consistently.

**Annexure-I**

## 3103 Construction & Demolition(C&D) Management

Agartala Municipal Corporation has already identified and demarcated suitable land at Radha Krishna Nagar, Agartala for establishment of a C&D Waste Processing Plant. The said plant is under construction and is designed to treat 25 TPD of C&D Waste.

It is also pertinent to highlight that some ULBs in Tripura are presently managing C&D waste through active involvement of Women Self-Help Groups (SHGs). These SHGs have been trained in manufacturing paver blocks and similar construction materials using recycled C&D waste and have been provided with start-up support, die-cast moulds, manual crushers, and other essential tools. The paver blocks produced by these groups have been locally tested and certified for strength and durability and have generated significant market demand within the State. In addition, processed C&D waste is being utilized for filling low-lying areas and supporting road construction activities.

Through effective collaboration between Urban Local Bodies and women-led Self-Help Groups, Tripura is progressively reducing landfill burden, minimizing environmental pollution, promoting resource recovery, and advancing circular economy practices across the State.

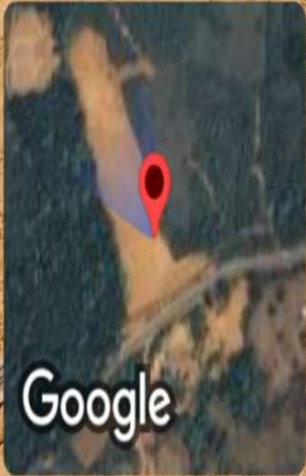
Dharmanagar Municipal Council, Udaipur Municipal Council, Teliamura Municipal Council and Mohanpur Municipal Council are among the ULBs already producing paver blocks and bricks from processed C&D waste.

Few pictures of under construction C&D Waste Processing Plant at Radha Krishna Nagar, Agartala and pictures of Women SHG preparing paver block utilising C&D waste in ULBs are given below:

3104



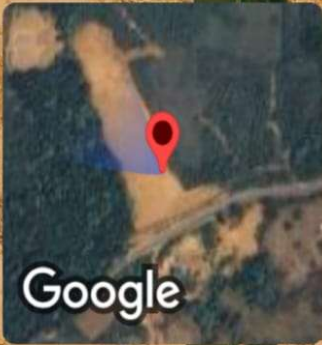
GPS Map Camera




Radhakishorenagar, Tripura,  
India 🇮🇳  
Gamcha Kobra - Nandan Nagar Rd, Nandan  
Nagar, Radhakishorenagar, Tripura 799008, India  
Lat 23.885233° Long 91.328689°  
Saturday, 25/04/2026 08:42 AM GMT +05:30



GPS Map Camera



Radhakishorenagar, Tripura,  
India 

Gamcha Kobra - Nandan Nagar Rd, Nandan  
Nagar, Radhakishorenagar, Tripura 799008, India  
Lat 23.885237° Long 91.328679°  
Saturday, 25/04/2026 08:42 AM GMT +05:30

3106



GPS Map Camera



Radhakishorenagar, Tripura,  
India 🇮🇳  
Gamcha Kobra - Nandan Nagar Rd, Nandan  
Nagar, Radhakishorenagar, Tripura 799008, India  
Lat 23.885146° Long 91.328653°  
Saturday, 25/04/2026 08:42 AM GMT +05:30

**Under Construction C&D Plant at R.K. Nagar, Agartala**







**Glimpses of paver block making by Women SHG and paver block used in internal road of Udaipur Municipal Council**





**Glimpses from a training session on paver block production at Mohanpur Municipal Council showcase hands-on skill-building for SHG members.**

3112  
Testing report of paver block



# TRIPURESWARI CONSTRUCTION & CONSULTANCY

*All Civil Engineering Tests Concerning Construction  
of Building & Roads, Topographical Survey, Soil Investigation &  
All Kinds of Govt. Works (Civil & Electrical) done here.*

Ref. No. : TCC/Compressive Strength Test/MMC/2021-22

Date: 11.11.2021

Issued To : To  
Dy. Chief Executive Officer  
Mohanpur Municipal Council  
Mohanpur, Tripura

Sub : Testing of Compressive Strength (ZIGZAG Paver block)  
Ref./Order No. : Nil

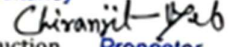
Dear Sir,

With reference to the subjects necessary test have been conducted on supplied Material of the above mentioned Test at our laboratory and the test report are in one copy are enclosed herewith.

Thanking you,

Yours sincerely

Tripureswari Construction  
& Consultancy

For   
Tripureswari Construction & Consultancy Proprietor



Office : L.N. Bari Road, Near Loknath Ashram, Banamalipur, Agartala, Tripura (W), Pin-799001  
Mobile : 9774513974 / 9485152102 Email : ccstripureswari@gmail.com

3113



# TRIPURESWARI CONSTRUCTION & CONSULTANCY

*All Civil Engineering Tests Concerning Construction  
of Building & Roads, Topographical Survey, Soil Investigation &  
All Kinds of Govt. Works (Civil & Electrical) done here.*

Ref. No. : TCC/Compressive Strength Test/MMC/2021-22

Date: 11.11.2021

Issued To : To  
Dy. Chief Executive Officer  
Mohanpur Municipal Council  
Mohanpur, Tripura

Sub : Testing of Compressive Strength.  
Description of samples : 3(three) No's 80mm ZIGZAG Paver block for following tests.

### Test Reports on Compressive Strength

| Sl No.  | Thickness. (mm) | Plane Area mm <sup>2</sup> | MIX proportion | Compressive strength in N/mm <sup>2</sup> | Result      |
|---|-----------------|----------------------------|----------------|---|-------------|
| 1   | 80              | 25200                      | -              | 23.01                                     | <b>Good</b> |
| 2   | 80              | 25200                      | -              | 19.84                                     |             |
| 3   | 80              | 25200                      | -              | 21.82                                     |             |
| Average Compressive strength (N/mm <sup>2</sup> ) |                 |                            |                | 21.56                                     |             |

#### **Note:-**

- The certificate refers only to the sample submitted for testing.
- The Certificate is valid at the time of and under the condition specified therein.
- This Certificate may not be reproduced in part without the permission of this laboratory.
- Any correction invalidates this certificate.

*Chiranjit Des*  
CHIRANJIT DES  
Engg. (B.Tech Civil)  
Tripureswari Construction  
& Consultancy, Agartala.



Office : L.N. Bari Road, Near Loknath Ashram, Banamalipur, Agartala, Tripura (W), Pin-799001  
Mobile : 9774513974 / 9485152102 Email: ccstrinureswari@gmail.com

**Annexure-II**



**AGARTALA SMART CITY LIMITED**  
 (CIN: U74999TR2016SGC013499)  
 1st FLOOR, UD BHAWAN, SHAKUNTALA ROAD  
 AGARTALA, WEST Tripura – 799001

No. F. 4(158)/ ASCL/STP/HWH/2024/P-I/ 8945

Dated, 22.05.2026

To  
 The Chief Executive Officer,  
 Agartala Smart City Limited  
 1<sup>st</sup> Floor, U. D. Bhawan, Sakuntala Road  
 Agartala, Tripura West

**Sub:-** Submission of information regarding construction of STPs near Kalapania Khal and Haora River Bank in compliance with the Hon'ble NGT Order dated 13.04.2026-reg.

**Ref.:-** No. F. 7(2)-UDD/DUD/2024 dated 05.05.2026

Sir,

Please refer to above. In this context, furnished below are information sought vide letter at reference.

|   |  |   |
|---|--|---|
| 1 | Detailed status of construction of 5 MLD STP near Kalapania Khal and 8 MLD STP near Haora River.                               | <p><b>8 MLD STP near Haora River:</b></p> <ol style="list-style-type: none"> <li>1. Concreting of all five lifts of SBR has been almost completed.</li> <li>2. Reinforcement binding and shuttering work for the SBR walkway is in progress.</li> <li>3. Slabs of CCT, UV, and Sludge Sump House units has been completed.</li> <li>4. Raft work will commence after cessation of rainfall for centrifuge unit.</li> <li>5. Orders for all Mechanical and Electrical equipment have been placed.</li> </ol> <p><b>5. MLD STP near Kalapania Khal:</b></p> <ol style="list-style-type: none"> <li>1. SBR 80% completed</li> <li>2. Admin &amp; CCT building pile completed</li> </ol>  |
| 2 | Justification for the selection of the present sites including details of technical feasibility studies and approval obtained. | <p>The proposed 5 MLD STP near Kalapania Khal and 8 MLD STP near Haora River have been planned considering the requirement of interception, diversion, and treatment of sewage presently flowing through drains and outfalls connected to nearby water bodies. Selection of sites for establishment of Sewage Treatment Plants (STPs) within Agartala City has been carried out after detailed technical assessment, field verification, catchment analysis, and evaluation of prevailing urban infrastructure constraints. The site selection process was guided by the objective of ensuring technically feasible, environmentally sustainable, and operationally efficient sewage management systems for the city.</p> <p>The primary considerations adopted during site selection</p> |

*John*

included:

- 3116
- Availability of suitable land in proximity to sewage catchment areas;
  - Hydraulic feasibility and optimization of sewage conveyance systems;
  - Minimization of pumping requirements and operational costs through gravity-based flow to the maximum extent feasible;
  - Integration with the proposed sewage network and interception arrangements;
  - Environmental considerations including reduction of untreated sewage discharge into natural water bodies;
  - Minimization of social impact, displacement, and rehabilitation issues;
  - Long-term operational sustainability, accessibility, and maintainability of the facilities.

The selected locations are technically suitable from the perspective of sewer network connectivity, hydraulic flow conditions, availability of land, and minimization of pumping requirements. Kalapania Khal passes through densely populated urban areas including Joynagar, Office Lane, and adjoining localities, which presently contribute significant wastewater discharge into the drainage system. Establishment of a dedicated STP within this catchment was therefore considered essential for interception, treatment, and reduction of untreated sewage entering downstream drainage channels and associated water bodies.

In view of the urgent requirement for sewage treatment infrastructure and after detailed surveys, technical assessment, and evaluation of sewage interception feasibility, a suitable parcel of land was identified in close proximity to the sewage catchment area. Since no feasible Government/ Khas land was available along the corridor, the required land was procured from private land owners through due process. The land is presently under the ownership and possession of ASCL, thereby ensuring clear land availability of uninterrupted execution and long-term operation of the project.

**Haora River Bank STP:**

For the proposed 8 MLD STP near Haora River, the selected site, situated on land belonging to Agartala Municipal Corporation (AMC), was finalized after resolution of long-standing encroachment issues. The proposed STP is expected to significantly reduce untreated sewage discharge into the Haora River system and improve the overall environmental condition of the surrounding urban area.

Since the land for both projects are under the ownership of ASCL and AMC respectively, no separate site – specific approval was taken at the stage of site finalization.

Further, considering the highly urbanized and densely populated

|   |   |   |
|---|---|---|
|   |   | nature of Agartala city, accordingly, site selection was undertaken based on overall technical suitability, land availability, feasibility of effective sewage management, and long-term operational viability within the respective catchment areas. |
| 3 | Clarification on whether the sites fall within the flood plain or near the water body supported with relevant technical documents / maps.   | Both the sites do not fall within flood plain.  |
| 4 | Details of flood protection measures, design safeguard, or mitigation measures incorporated to prevent flooding the STPs and discharge of untreated sewage into river during monsoon. | Both the STPs are not in the flooding zone, so no protection work taken up. Moreover, for both the STPs, are adopting SBR technology as a result the SBRs are almost 6.00 m height from existing ground level.  |
| 5 | Any clearance / approval obtained from the competent authorities, including environmental or regulatory authorities, if applicable.   | Consent to Establishment (CTE) and Consent to Operate (CTO) are applicable which is yet to be taken   |

This is for your kind information and doing the needful please.

Yours faithfully

*Debm*  
27/05/2026

Er. Subodh Debbarma, Executive Engineer  
Agartala Smart City Limited