

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

Original Application No. 606/2018
(IA No. 163/2021)

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

(Six Monthly Progress Report in respect of State of Sikkim)

Submissions before the Hon'ble National Green Tribunal, P.B., with respect to observations in the order dated 04.07.2024 at paragraph 4.

1. Hon'ble NGT observations on Solid waste management

- i. *It is a serious concern that altogether 33.11TPD waste is disposed in landfills due to waste not getting processed. Even 6 ULBs generating relatively less quantity of waste are also dumping waste through landfill. This may be a continuous threat to sensitive ecology.*
- ii. *We do not find quantitative figures on compost utilized and its quality as well as residue management.*
- iii. *In particular context to Sikkim, it is necessary to have performance assessment done for existing waste in terms of energy recovery and its use. On the basis of results, such efforts can be replicated.*
- iv. *At Gangtok on Martam site, there exists 2.33 lakh MT of legacy waste and estimated addition of 25.0TPD unprocessed waste is also made as legacy waste.*
- v. *There is no quantified figures on residues/rejects arising out of 92,530 Tonnes of waste bio-mined and its management to prevent further damages to environment. We find specific attention is required on management of inerts considering slope stability, good earth, transportation of plastics and safeguarding existing landfills.*

State's submission:

The following are the submissions made with regard to solid waste management in Sikkim:

A. Bio-mining of legacy waste at Martam:

- i. A total of 1,29,202 MT (1.29 lakh MT) of legacy waste has been completed as on 20th December, 2024 out of the total legacy waste of 2.33 lakh MT (55% progress). The progress was hampered due to closure of NH 10 till September this year owing to landslides caused by heavy monsoonal rain. During this period the contractors could not transport the RDF to cement factories located outside the State for co-treatment.

Table 1. The fractions of the total waste bio-mined till date are as given below:

Sl. No	Fraction	Jan-July 2024	July- Dec 2024
1.	Good Earth	13880 MT	7334 MT
2.	RDF	18506 MT	5501 MT
3.	Inert	50892 MT	20169 MT
4.	Misc	9253 MT	3667 MT
	Total	92531 MT	36671 MT

- ii. The RDF is being transported outside the State by the Contractors to co-processing plants. They have signed MOUs with Dalmia Cement for co-processing at cement kiln in Rohtas, Bihar and with Dew Resource Management for co-processing at Muzaffarnagar, Uttar Pradesh.
- iii. The Forest Department has been asked to use the Good Earth for using in their nurseries and parks.

B. Daily Waste Processing:

Table 2: Daily Waste Processing

Month	Total Waste Collected (in TPD)	Waste Processed (in TPD)	Waste Land filled (in TPD)	Processing %
June 24	63.49	48.87	14.58	76.90%
July 24	75.36	59.25	16.10	78.60%
Aug 24	71.68	53.76	17.91	75.00%
Sep 24	66.69	50.96	15.72	76.40%
Oct 24	69.22	55.71	13.19	80.50%

- i. Processing of daily waste has increased substantially in the last six months as may be perused in the above table.
- ii. Gangtok Municipal Corporation has floated an open tender for daily waste collection from experienced firms and waste management agencies. The tender has been completed and the agency has been selected. Offer letter has been issued to selected agency (copy annexed as Annexure 1).
- iii. The Government of Sikkim has approved proposal to set up “Municipal Solid Waste Treatment Project” at Martam landfill at the total cost of Rs. 20.00 crore. The installation of the processing equipment is set to start from January, 2025.

2. Hon’ble NGT observations on Sewage management

- i. *Out of installed 19.94 MLD capacity of existing STPs, functional capacity is 18.30MLD and influent received is 15.52MLD thereby leaving 2.78 MLD in treatment.*
- ii. *We do not find proper management plan for rural sewage generation which presently estimated to be 21.41MLD and is relying on septic tanks and soak pits. Modular Package small capacity STPs serving sparse population and having difficult terrain can be explored.*
- iii. *It was mentioned during the proceedings that, treated sewage is entering in to river/ rivulets/ jhoras and this is not permissible under the Water Act. Fast flowing water bodies should not be exploited for disposal of sewage or garbage.*
- iv. *It was shocking that Sikkim PCB inspite of having analytical facilities, is still relying on other laboratories. We direct that, laboratory of PCB should be made fully functional and accredited in due course. In the next report, performance analysis of STPs and water quality of rivers including jhoras receiving sewage, be furnished.*

State's submission:

A. Table 3. Details of Sewage Treatment Plant in Urban areas:

Existing STPs and Treatment Capacity (in MLD):

Sl. No.	Town/Location	Installed Capacity (MLD)	Operational/Functional Capacity(MLD)	Actual flow (MLD)
1.	Gangtok Zone I, Adampool	8.00	7.50	6.50
2.	Gangtok Zone I, Adampool	4.69	4.50	3.90
3.	Gangtok Zone I, Ranipool	1.27	1.10	0.92
4.	Gangtok Zone IV, Lower Sichey	3.90	3.30	2.80
5.	Gangtok Zone II, Lower Syari	1.60	1.50	1.00
6.	SMIT Mazitar	0.48	0.40	0.40
Total		19.94	18.30	15.52

Installed capacities of STPs: **19.94 MLD**

Functional/ operational capacities: **18.30 MLD**

Influent received in the STPs: **15.52 MLD**

Treatment available: **2.78 MLD**

Construction of Tertiary Treatment units in the existing 13.00 MLD Sewage Treatment Plant (STP) at Adampool, Gangtok has been commenced. Construction and commissioning will be completed by September 2025. Addition of Tertiary treatment units in the existing STPs will ensure reuse of treated waste water for secondary purposes. Reuse of treated waste water in the peripherals of STP for road dust mitigation, watering roadside avenue plantation, providing water to the pharmaceuticals industries are few probable areas being actively explored, for which operating procedures are in the making. No sewage is disposed off in the rivers or fast flowing water bodies.

B. The Rural Sewage is being managed through the interventions as listed below:

Rural households are scattered and sparsely located with a rural population density of 67 persons per sq km. The average household per sq km in rural areas is 13 households as compared to 934 households per sq km in urban areas.

The average rainfall in the State is about 2500-3000 mm annually which results in frequent landslides leading to issues in rural connectivity and utilities can get disturbed or washed away.

Therefore, owing to the difficult land terrain, establishment of a Sewerage Treatment Plant (STP) and sewerage lines in rural areas is technically not feasible at present. However, despite the above-mentioned challenges, the State of Sikkim has managed to address the issues pertaining to rural sanitation through various interventions such as;

i. Single Pit:

The Single Pits are large in size (average 8x8x8) which lasts for 20 plus years.

The average family size is 4 persons per HHs .

In case of filling up of the single pit, a new pit is constructed alongside the old pit.

Retrofitting of single pit is being taken up under SBM-G by converting it to twin pits.

ii. Septic Tank:

Retrofitting of Septic Tank with Soak Pit as per SBM-G guidelines is being done.

Cesspool vehicle from nearby ULB is used for extracting the faecal sludge for treatment at the nearest Urban STP as and when required.

iii. Twin Pit:

The State is promoting twin pit toilets for Faecal Sludge Management as per the SBM-G Guidelines

All the new individual household toilets under SBM-G are being constructed in the twin pit model.

iv) Establishment of a Co-treatment facility.

A feasibility study for establishment of a Co-treatment facility was conducted in 3 different locations in Sikkim viz., Syari, Sichey and Adampool. After a thorough study, Adampool in East Sikkim was found to be technically the most suitable for establishment of a 10 KLD Co-treatment facility.

Land for the co-treatment plant has been identified and In-principle approval of the Government has been accorded for the establishment of the facility at a total cost of Rs.18.00 lacs for which funds are available under the Swachh Bharat Mission (Grameen).

v) Mobile Sewage Treatment Unit (MTU)

v. (a) Two Mobile Sewage Treatment Unit (MTU) @ Rs.54.52 lacs per unit have been provided to Pakyong and Soreng Districts to take care of faecal sludge extracted from septic tanks. Once operational, these in-situ treatment facility will treat 6000 liters of faecal sludge per hour.

v. (b) The State Government has sanctioned procurement of 5 additional Mobile Treatment Units at a total cost of Rs. 2.72 crore from the Swachh Bharat Kosh fund to cater to the remaining rural areas.

C. The State Air and Water Laboratory under SPCB-Sikkim is under the final stage of getting NABL (National Accreditation Board for Testing and Calibration Laboratories) accreditation in accordance with ISO/IEC 17025:2017 for testing laboratories. The accreditation is for three key disciplines **Surface water, Waste water (pollution and environment) and Ambient air (atmospheric pollution)** comprising of twenty environmental parameters that are very important for environmental monitoring.

Pre-assessment of State Air and Water Laboratory, SPCB-Sikkim for NABL Accreditation was carried out by NABL official on 03.09.2024.

After the pre-assessment, a total of six non-conformities were reported by the NABL which were successfully complied by the State Air and Water Laboratory, SPCB-Sikkim within fifteen days of pre-assessment.

The final Assessment was completed on 5th and 6th of December 2024 and certain suggestive measures have been advised for the NABL accreditation. Meanwhile the analysis report of STPs from third party laboratory is enclosed for kind reference (copy annexed as Annexure 2).

The river water quality at the downstream of STPs were assessed in the month of November 2024 and even during the non-monsoon season, the quality of river water was found to meet the standard set for outdoor bathing quality.

The information on water quality of river receiving treated sewage is given in Table 4 below:

Table 4. WATER QUALITY DATA OF RIVERS RECEIVING TREATED SEWAGE

Name of water Body	Sampling point	NWMP Station code	Sampling date	pH	D.O. mg/l	B.O. D mg/l	T. Coliform MPN/100 ml	Faecal Coliform MPN/100ml
Ranikhola	Downstream Of STP Adampool 27.309928°N 88.583236°E	1804	11-11-2024	6.7	6.5	2.9	96	74
Ranikhola	Downstream of STP Ranikhola After confluence with BushokKhola at Jhalipool (Setipool) 27.292886°N 88.590303°E	1805	11-11-2024	7.1	7.0	2.4	69	41

Table 5: PRIMARY WATER QUALITY CRITERIA FOR BATHING WATER (Water used for organised outdoor bathing) AS PER MoEF&CC.

Parameter	Standard
Fecal Coliform MPN/100 ml:	500 (desirable) 2500 (Maximum Permissible)
pH:	Between 6.5 - 8.5
Dissolved Oxygen:	5 mg/l or more
Biochemical Oxygen demand 3 day,27°C:	3 mg/l or less



Annexure- 1

GANGTOK MUNICIPAL CORPORATION

DE-ORALI

Memo No: GMC/6727/III/2024/OL/01

Dated: 08/10/2024

To,

M/S CNS Builders

Waste Management Agency

Bojoghari, Gangtok

Subject: Offer Letter for Source Segregation IEC, Door to Door Collection and Transportation of Municipal Solid Waste to Waste Treatment Facilities at Martam as per MSW Rule 2016 and State Action Plan on MSW 2019

Sir,

Your bid for Source Segregation IEC, Door to Door Collection and Transportation of

Municipal Solid Waste to Waste Treatment Facilities at Martam as per MSW Rule 2016 and State Action Plan on MSW 2019 is approved as LI.

1. Therefore, you are requested to deposit the Sum of Rs. 5, 00,000 00 (Rupees Five lakhs) only as bid security refundable.
2. You are further directed to submit the comprehensive working module to be included in the formal agreement with in 15th day from the received of this offer letter.
3. Once the formal agreement is signed after vetting from law department, you have to commence the work within 15days without any delay.
4. You are directed to submit the payment breakup schedule, as per the discussion with proper documents to support your claim.
5. While taking possession of GMC vehicle, proper inspection and ledger to be maintained, once the vehicle is handed over, no claims or excuse will be entertained , the Operation and Maintenance lies with Waste Management Agency including all Taxes
6. GMC will appoint one Nodal Officer to coordinate with Waste Management Agency, you may appoint similar officer at your level for better and efficient management.

7. GMC will provide 24nos of Garbage Collection Vehicles, Including Drivers and Two Safaikarmachari, WMA may appoint their own drivers and Safaikarmachari on need basis, GMC will not appoint or provide any additional requirement or man power. The Salary of one drivers and two Safaikarmachari provided by GMC will be borne by GMC.
8. Field Supervisor and Junior Engineer of GMC will monitor the work of WMA as per the Terms and conditions and report to nodal officer of GMC and coordinate with Nodal officer of WMA for better implementation of plans.
9. The User fee of commercial establishment/offices and Hospitals will be collected by GMC and release will be made to WMA as per the agreed payment schedule and utilized for payment of GMC Drivers and SK attached to 24 GMC Vehicles.

The other Terms and Conditions of the offer Letter is as stated below.

Detailed Terms and Conditions for Waste Management Agency for Door-to-Door Collection.

Solid Waste Management under Gangtok Municipal Corporation

1. The Waste Management Agency should have the experience in Waste Collection and Methodology as per the IEC activity.
2. The Municipal Solid Waste Management Rule 2016 have to be followed all the time.
3. The State Action Plan on Solid Waste Management 2019 has to be followed by the agency without any breach.
4. The Terms and Conditions of MOU with GMC has to be signed, if the contract is approved
5. The Waste Management Agency, will carry out the Survey as per SWM Rule 2016 to conduct the Self Declaration of Waste Producer and Bulk Waste Generator Ward Wise and submit the actual details to the Gangtok Municipal Corporation in prescribed form within three months of Commencement of Contract.
6. The Waste Management Agency Should Conduct the IEC on SWM and Source Segregation on regular basis, mixed waste will not be collected at any point of time, if mixed waste is collection the cost of segregation will be borne by Waste Management Agency.
7. The Successful bidder have to deposit the Security of Rs. 5, 00,000.00 (Rupees Five Lakhs) only refundable
8. The Waste Management Agency will be allowed to collect the Valuable Scrap waste from the Municipal Ward in order to reduce the load on Waste Treatment Facilities.
9. The Waste Management Agency should have the registered License from SPCB and GMC to carry out the Work.

10. The Waste Management Agency is allowed to collect the user charge as prescribed by GMC from each house hold on monthly basis.

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11. The Jurisdiction of Contract is Gangtok Municipal Corporation municipal Ward.

12. The Waste Management Agency, will not be allowed to dump waste along Footpath, Roadside and Jhoras, it will be the responsibility of the Waste Management Agency to keep entire Gangtok Municipal Corporation Area, from MSW all the time.

13. Compliance with SWM Rule 2016:

- O Adherence: The agency must fully comply with the Municipal Solid Waste Management Rules, 2016. These rules outline the procedures and standards for managing municipal solid waste, including its collection, segregation, and disposal.
- o Implementation: The agency is responsible for implementing practices that protect human health and the environment, ensuring that all aspects of waste management are handled in accordance with these regulations.

14. Experience and Methodology Requirements:

- o Experience: The Waste Management Agency must have substantial and demonstrable experience in managing waste collection operations. This experience should be in line with the methodologies prescribed in Information, Education, and Communication (IEC) activities.
- O Methodologies: The IEC activities aim to educate the public about effective waste management practices. The agency's operations must align with these methodologies to ensure that waste management practices are up to standard and comply with regulatory requirements. This includes training and public outreach efforts to support proper waste segregation and disposal.

14. Adherence to State Action Plan on Solid Waste Management 2019:

- o Compliance: The Waste Management Agency must follow the State Action Plan on Solid Waste Management 2019. This plan provides a strategic framework for waste management at the state level, including targets for waste reduction, recycling, and treatment.
- o Contract Breach: Any failure to adhere to these guidelines will be considered a breach of contract, potentially leading to penalties or contract termination.

16. Signing of MOU with GMC:

- o Memorandum of Understanding (MOU): Upon contract award, the Waste Management Agency is required to sign an MOU with Gangtok Municipal Corporation (GMC). This MOU will specify the terms and conditions of the partnership, including detailed responsibilities, performance expectations, and other contractual obligations.

17. Survey and Self-Declaration of Waste Producers:

- o Survey Requirement: Within three months of the contract's commencement, the agency must conduct a comprehensive survey as per SWM Rule 2016. This involves collecting self-declarations from waste producers and bulk waste generators on a ward-wise basis.
- o Submission: The data collected must be compiled and submitted to GMC in the prescribed format. This ensures that accurate information is available for effective waste management planning and execution.

18. Regular IEC Activities and Segregation Compliance:

- o Information Education and Communication (IEC) Activities: The Waste Management Agency is responsible for conducting regular IEC activities aimed at educating the public on solid waste management and source segregation.
- o Segregation Policy: Collection of mixed waste is strictly prohibited. If the agency collects mixed waste, it will bear the cost of segregation. This is to ensure that waste is properly sorted and managed, supporting efficient recycling and disposal processes.

19. Security Deposit:

- O Deposit Amount: A refundable security deposit of Rs. 5, 00,000 (Rupees Five Lakhs) must be provided by the successful bidder.
- O Purpose: This deposit acts as a financial guarantee for the agency's performance and adherence to contract terms. The deposit will be

refunded upon successful contract completion, minus any deductions for breaches or non-compliance.

20. Collection of Valuable Scrap Waste:

O Authorization: The agency is authorized to collect valuable scrap waste from municipal wards. This helps in reducing the load on waste treatment facilities and ensures that recyclable and valuable materials are managed separately for efficient processing.

21. Licensing Requirements:

o Licenses: The Waste Management Agency must possess valid licenses from the State Pollution Control Board (SPCB) and GMC. These licenses are necessary to legally conduct waste management operations and ensure compliance with environmental and municipal regulations.

22. Collection of User Charges:

- o Charges: The agency is allowed to collect user charges from households on a monthly basis, as prescribed by GMC. These charges cover handling, transportation, and processing costs associated with waste management.
- O Transparency: The agency must ensure transparency in the collection and application of these charges to maintain trust and accountability.

23. Contract Jurisdiction:

- o Geographical Coverage: The jurisdiction of the contract covers the entire Gangtok Municipal Corporation area, which is divided into 19 municipal wards. The agency must operate within this jurisdiction and provide waste collection and disposal services across all wards.

24. Prohibition of Waste Dumping:

- o Responsibility for Waste: In instances where the public may throw waste in unspecified or designated locations, the Waste Management Agency is responsible for removing such waste. This ensures that cleanliness and sanitation standards are upheld, even beyond the scope of door-to-door collection services.

- o Clearing of Jhoras: The Waste Management Agency is specifically tasked with keeping Jhoras (streams) clear of waste and debris. To prevent dumping in Jhoras, the agency must conduct rigorous Information, Education, and Communication (IEC) activities in the surrounding areas. These activities should focus on educating the public about the environmental impact of dumping waste into streams and promoting proper waste disposal practices.

These terms and conditions are designed to ensure that the Waste Management Agency performs its duties effectively and in compliance with established regulations. Adherence to these requirements is essential for maintaining the cleanliness and hygiene of the Gangtok Municipal Corporation. Non-compliance may result in penalties or the termination of the contract. The agency's performance will be continuously monitored to ensure that all aspects of waste management are handled efficiently and in accordance with regulatory standards.

This offer is valid for 15 (Fifteen Days Only) please submit the acceptance letter, along with details plan and Security Deposit.

Regards


Municipal Commissioner
Gangtok Municipal Corporation
Deorali
Gangtok Municipal Corporation

TEST REPORT

Name & Address of the Customer	Report No.	: MSK/GHY/2024-25/00696A
"PHED, Govt of Sikkim" Public Health Engineering Department, Government of Sikkim, Nirman Bhawan, Gangtok, Sikkim, Pin-737101	Report Date	: 27.11.2024
	Nature of Sample	: Effluent Water
	Sample Mark	: ZONE 1, STP WATER
	Sample Submitted On	: 17.11.2024
	Sample Number	: MSKGL/ED/2024-25/11/01712
Reference No.& Date: As per Telephonic Conversation, Date : 12.11.2024		

Chemical Analysis Result

Sl. No.	Parameter	Unit	Limit	Result	Test Method
1.	pH value	None	6.0-8.5	6.87 at 25 Deg C	APHA(24th Edition) 4500-H-B
2.	Total Suspended Solids (as TSS)	mg/l	20.0	57	APHA (24th Edition) 2540 D
3.	Biochemical Oxygen Demand (as BOD)	mg/l	15.0	8.5	APHA (24th Edition) 5210B,2017
4.	Chemical Oxygen Demand (as COD)	mg/l	125.0	36	APHA (24th Edition) 5220B,2017

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TEST REPORT

Name & Address of the Customer "PHED, Govt of Sikkim" Public Health Engineering Department, Government of Sikkim, Nirman Bhawan, Gangtok, Sikkim, Pin-737101	Report No.	: MSK/GHY/2024-25/00696B
	Report Date	: 27.11.2024
	Nature of Sample	: Effluent Water
	Sample Mark	: ZONE 2, STP WATER
	Sample Submitted On	: 17.11.2024
	Sample Number	: MSKGL/ED/2024-25/11/01713
Reference No. & Date: As per Telephonic Conversation, Date : 12.11.2024		


Chemical Analysis Result

Sl. No.	Parameter	Unit	Limit	Result	Test Method
1.	pH value	None	6.0-8.5	7.24 at 25 Deg C	APHA(24th Edition) 4500-H-B
2.	Total Suspended Solids (as TSS)	mg/l	20.0	47	APHA (24th Edition) 2540 D
3.	Biochemical Oxygen Demand (as BOD)	mg/l	15.0	9.2	APHA (24th Edition) 5210B,2017
4.	Chemical Oxygen Demand (as COD)	mg/l	125.0	28	APHA (24th Edition) 5220B,2017

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TEST REPORT

Name & Address of the Customer “PHED, Govt of Sikkim” Public Health Engineering Department, Government of Sikkim, Nirman Bhawan, Gangtok, Sikkim, Pin-737101	Report No.	: MSK/GHY/2024-25/00696C
	Report Date	: 27.11.2024
	Nature of Sample	: Effluent Water
	Sample Mark	: Ranipool , STP WATER
	Sample Submitted On	: 17.11.2024
	Sample Number	: MSKGL/ED/2024-25/11/01714
Reference No.& Date: As per Telephonic Conversation, Date : 12.11.2024		

Chemical Analysis Result

Sl. No.	Parameter	Unit	Limit	Result	Test Method
1.	pH value	None	6.0-8.5	7.39 at 25 Deg C	APHA(24th Edition) 4500-H-B
2.	Total Suspended Solids (as TSS)	mg/l	20.0	53	APHA (24th Edition) 2540 D
3.	Biochemical Oxygen Demand (as BOD)	mg/l	15.0	8.6	APHA (24th Edition) 5210B,2017
4.	Chemical Oxygen Demand (as COD)	mg/l	125.0	39	APHA (24th Edition) 5220B,2017

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TEST REPORT

Name & Address of the Customer “PHED, Govt of Sikkim” Public Health Engineering Department, Government of Sikkim, Nirman Bhawan, Gangtok, Sikkim, Pin-737101	Report No.	: MSK/GHY/2024-25/00696D
	Report Date	: 27.11.2024
	Nature of Sample	: Effluent Water
	Sample Mark	: ZONE 4, STP WATER
	Sample Submitted On	: 17.11.2024
	Sample Number	: MSKGL/ED/2024-25/11/01715
Reference No. & Date: As per Telephonic Conversation, Date : 12.11.2024		

Chemical Analysis Result

Sl. No.	Parameter	Unit	Limit	Result	Test Method
1.	pH value	None	6.0-8.5	6.87 at 25 Deg C	APHA(24th Edition) 4500-H-B
2.	Total Suspended Solids (as TSS)	mg/l	20.0	56	APHA (24th Edition) 2540 D
3.	Biochemical Oxygen Demand (as BOD)	mg/l	15.0	7.9	APHA (24th Edition) 5210B,2017
4.	Chemical Oxygen Demand (as COD)	mg/l	125.0	33	APHA (24th Edition) 5220B,2017

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