

**BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL,
SOUTHERN ZONE, CHENNAI**

Application No. 107 of 2017

Mr. Antony Clement Rubin,
Flat No. 35, Block 3,
Priyadarshini Apartments,
89, Barakka Road,
CHENNAI 600 012

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Applicant

Versus

1. State of Tamil Nadu,
Through the Chief Secretary,
Government of Tamil Nadu,
Namakkal Kavignar Maaligai,
Fort St. George,
CHENNAI 600 009
2. Indian Institute of Technology, Madras,
(IIT PO, Chennai 600 036),
Represented by its Director,
Beside Adyar Cancer Institute, Opposite CLRI,
Sardar Patel Road, Adyar,
CHENNAI 600 036
3. Greater Chennai Corporation,
Through its Commissioner,
Ripon Building,
CHENNAI 600 003.
4. Tamil Nadu Pollution Control Board,
Through its Member Secretary,
76, Mount Salai, Guindy,
CHENNAI 600 032
5. Tamil Nadu Forest Department,
Government of Tamil Nadu,
Through its Principal Chief Conservator of
Forest & Chief Wildlife Warden,
Panagal Malagai, Saidapet,
CHENNAI 600 015

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Respondents

FURTHER REPORT FILED ON BEHALF OF THE 2nd RESPONDENT

I, Dr. Jane Prasad, daughter of Shri John Matchado Aged 53 years working as Registrar of the 2nd Respondent Institute do hereby solemnly and sincerely state and affirm as follows:

1. I am the Registrar of the Indian Institute of Technology, Madras, Chennai, the 2nd respondent herein. I am well acquainted with the facts of the case.

2. It is submitted that the 2nd Respondent has already filed two reports dated in September and October 2020 as directed by this Hon'ble Tribunal in its order passed in the above matter on 26.02.2020. The matter was later listed on 05.03.2021 for consideration of two reports filed by the 2nd Respondent. This Hon'ble Tribunal after noting the same had directed the 2nd Respondent to submit a further report of the things that transpired after October, 2020.

3. Accordingly this report is being filed to place on record, the various measures taken with regard to solid waste management and for implementation of the directions of this Hon'ble Tribunal contained in its order dated 26.02.2020 and 25.01.2021.

4. It is submitted that IIT Madras has effectively implemented the Solid Waste Management Activities in accordance with Solid Waste Management Rules, 2016 under the supervision/guidance of the Permanent Committee constituted by the Tribunal vide order dated 26/02/2020.

Municipal Solid Waste Management:

5. It is submitted that IITM ensures effective segregation of wastes, processing, recycling, treatment and disposal of municipal solid waste as per Solid waste Management Rules 2016. The management includes:

- ❖ Garbage is collected and stored in zone wise garbage collection rooms (Residential/Academic/Hostel zones) and further segregated as bio-degradable waste (organic/hygiene/recyclable), non-biodegradable waste and recyclable waste using different color coded bins.
- ❖ In residential zone, garbage segregation is done at household level itself and is being collected daily at door-to-door and further a second level segregation is done by dedicated self help group called "OWZONE"

Improved Solid Management practices at IITM:

- ❖ The organic waste/biodegradable wastes generated are composted using composting facility and part of it is being treated using dome type bio-digester. The compost generated is used as a soil conditioner for landscaping area as IITM does not use any chemical fertilizer anywhere in view of wild life movement.
- ❖ Non-bio degradable wastes are sent to Chennai City Corporation dumpyard.
- ❖ The recyclable solid wastes are disposed off through recyclers and local vendors.
- ❖ Dewatered STP sludge is being used as manure for gardening within the campus

The statistics of solid wastes generated:

S. No	Description	No. of Persons	Quantity (kg/day)
1.	Residential Zone	5000	2500
2.	Hostel Zone	8000*	4000
3.	Academic Zone	9780	1956
4.	STP Sludge	-	303
	Total		8759

* Due to Covid, the hostels are not occupied in full capacity for the last one year.

6. The methods adopted in disposing/managing the solid wastes:

S.No	Description	Quantity (kg/day)	Method of Treatment / Disposal
1.	Biodegradable Waste	3382	Composting & Dome type Bio-digester
2.	Non-Biodegradable Waste	1152	Chennai City Corporation
3.	Recyclable waste	1522	Authorized Dealers
4.	STP Sludge	303	Manure for gardening
5.	E-waste (Computer, Printer, Regulator, Projector, Processors, UPS, Stabilizers, Electronics etc)	374 items	Through TNPCB Authorized Dealers

7. The area wise disposal of wastes dealt by several agencies/contractors engaged by IITM for management activities, their scope of work with regard to the above disposal are detailed below:

SL No	Area covered	Agency involved	Disposal mechanism
1.	Academic, Hostel and Residential zone including forest area and roads	M/s G4S Facility Services Pvt. Ltd, Contractor for housekeeping works.	<p>The work includes day to day collection of waste / trash from dustbins provided in each AZ/HZ buildings and depositing the same in large monkeyproof bin kept outside the buildings. Owzone will collect, segregate and dispose the above collected waste.</p> <p>Housekeeping contractor staff clear the litter from outside of the building on day to day basis. The collected waste shall be deposited on the large bins kept in the premises of the Hostel Zone buildings.</p> <p>The plastic and other foreign materials are collected from the forest area surrounding the hostel zone every week. All the collected waste shall be handed over to Owzone for further segregation and recycling.</p>
2.	Academic & Hostel zone Forest area	Mr. C.L Pradeep Kumar	The agencies are deployed in collecting the plastic and other foreign materials from the forest area covered other than hostel zone and ensure litter free area. Similarly, all the collected waste shall be handed over to Owzone for further segregation and recycling.
3.	Maintenance contract	AMC contractors	Construction debris generated by the Contractor shall be collected and recycled / disposed by the contractor as per clause given in the work agreement.
4.	Items from Hostels	Hostels	The waste such as old broken furniture like cots, chairs, tables, bi-cycles, washing machines, mattress, pillows and e-waste etc. are disposed / recycled by the Hostel management.
5.	Himalaya, Nilgiri, Vindya	Messes	The solid waste management including food waste are taken care by the hostel management. Cut vegetable wastes are converted into manure by composting. Food waste are partly used for bio-gas plant and partly sent to Pig breeding unit, TANUVAS

6.	Commercial establishments	Shops and restaurants etc	The solid waste management including food wastes are managed by the Committee for Monitoring General Facilities of Students (CMGFS) through respective vendor and proper disposal is ensured through Self Help Group – 'Owzone'.
7.	Door to door collection of waste from RZ buildings	Owzone	Door step collection from the quarters of the campus residents, segregation and re-cycling of waste.

8. As mentioned earlier, the Cleaning of Forest area & Border Road in IIT Madras Campus are carried out by the contractors deployed by IITM.

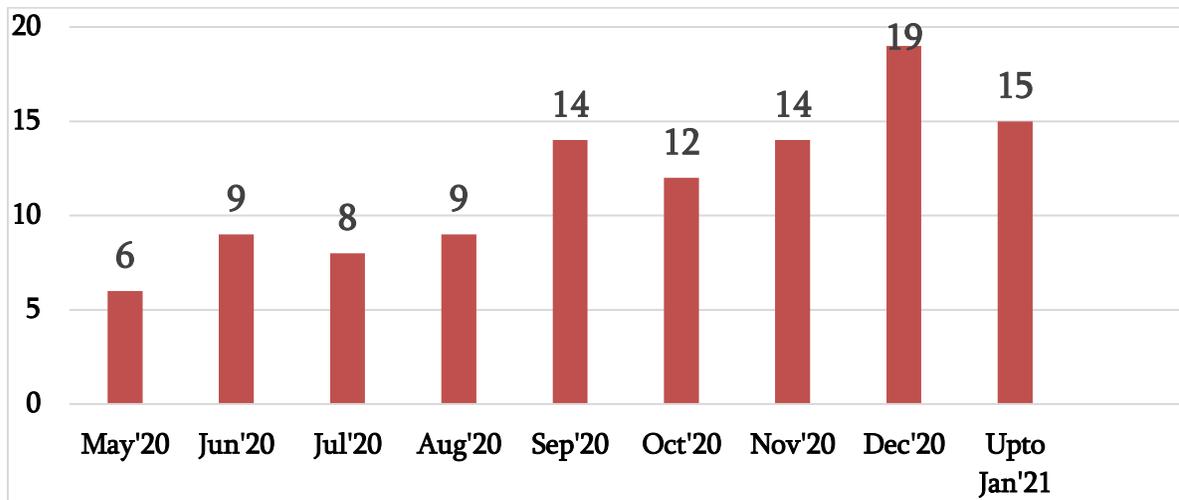
- ❖ Total Area covered under Forest and Border road cleaning contract – 322 acre
- ❖ 52% of total campus area is covered
- ❖ Remaining area 289 acre (other than shaded area in the map) is being taken care by housekeeping contractor M/s G4S Facility Services India Pvt Ltd
- ❖ Contractor: Mr. C.L.Pradeep Kumar
- ❖ Total Agreement value : Rs 31.58 Lakhs
- ❖ Date of Commencement of work : 27.10.2020
- ❖ Date of Completion : 26.10.2021
- ❖ Cleaning in Academic, Hostel & Residential Zone undertaken by the Self Help Group – 'Owzone' and their scope of works are as follows:
 - ❖ Collection, segregation, packing, weighing, transportation of garbage from forest area and hand over the saleable and non-saleable waste to Owzone group.
 - ❖ Keep the campus "Litter Free"
 - ❖ Minimum 7 Labourers and 1 Supervisor are engaged on daily basis (excluding Sunday and National Holidays)

9. As per Rule (4) (7) of Solid waste Management rules 2016, there is **vermi composting unit and a bio-gas plant** in IIT Madras. The waste vegetable cuttings of quantity 300-400 kg/day generated from hostel kitchen are disposed and the manure yield from this process are utilized for gardening within the campus. The bio-gas plant generates

bio-gas of capacity 800 kgs /day from the wet organic waste and the same is utilized for producing hot water.

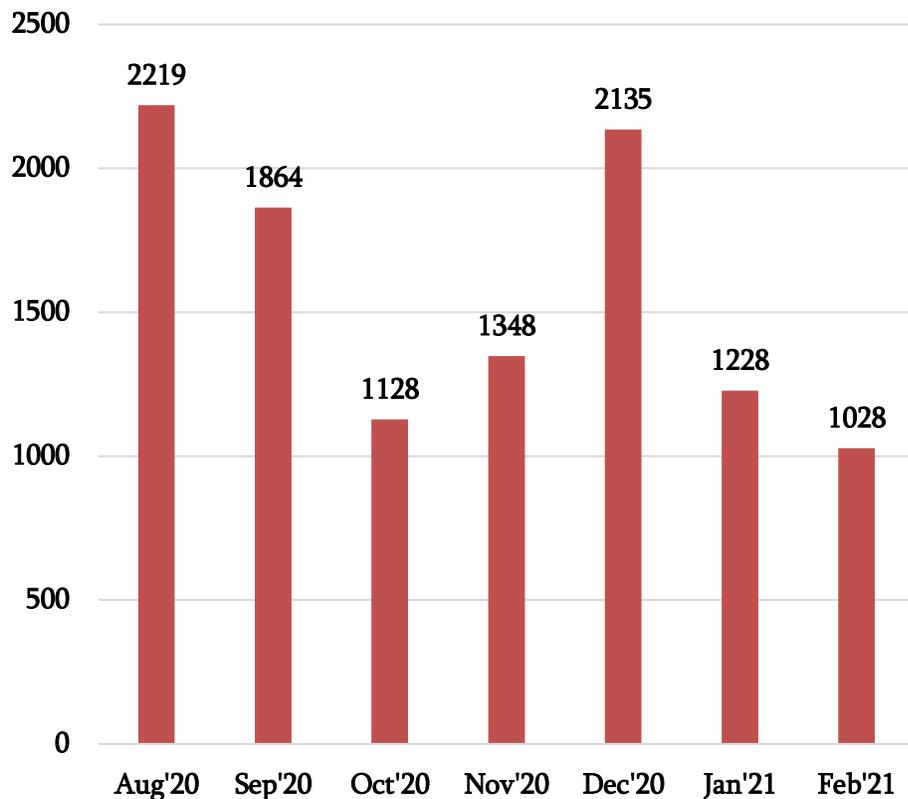
10. As per Rule 4(7) of Solid waste Management rules 2016 the statistics of garbage disposed through Corporation authorized vendors are as follows:

No of loads (15 cum hookable bin).



Garbage collected (Saleable waste handed over to Owzone), for pressing and baling

Weight in kg



Plastic Waste Management:

11. It is submitted that G.O. dated 25/06/2018 on Plastic ban of 14 products is strictly implemented in the shops restaurants, hostels, schools, and residential quarters inside the campus. The Security Guards of the Institute are given directions to verify the entry of person bringing the banned plastic products. This is to curtail the entry at source itself. Sign boards are erected at significant places displaying the ill effects of using one-time use & throw plastic and also the ban on one-time use plastic are also displayed. All licensees for running shops inside the campus are instructed to provide paper bags, jute bags, cloth bags and biodegradable material to pack the items sold in their shops.

Hazardous Waste Management through TNWML with the Consent of TNPCB

12. The details of Hazardous Waste Management through TNWML with the Consent of TNPCB is as follows:

Sl. No	Date	Location	Empty bottles in kgs	Chemical bottles in kgs
1	18.10.2019	Hazardous Store & Chemistry	1395	-
2	19.10.2019	Hazardous Store & Chemistry	1275	-
3	22.10.2019	Hazardous Store & Chemistry	-	3805
4	23.10.2019	Hazardous Store & Electrical Engineering and Bio-technology	-	2710
5	30.10.2019	Hazardous Store & Horticulture Office, Chemistry department & Bio-technology	2225	-
6	13.12.2019	Hazardous Store & Chemistry	2000	0.360
7	14.02.2020	Hazardous Store & Chemistry	2565	-
8	11.10.2020	Hazardous Store & Chemistry	1610	-
		Total	11070 kg	6515 kg

Total cost paid till date to TNWML by IIT Madras Rs 10 Lakhs.

13. The Statistics of Garbage Clearance place per building & floor is as follows;

Type of bin	No of bins per building	Total Number (Nos)
600 Litre monkey-proof garbage bin	2 per each building	80
90 Litre trolley type bin	SAC, OAT and hostels (one per building)	35
30 Litre foot operated / swing bin	1 per each toilet block	1550
7 Litre foot operated bin	1 per each office rooms	1680
Road side dust bin	At all important junctions along the road side.	100
CFL and tube light bin	3 Nos kept at Staff club.	3
Dust bins in hostel corridors	2 Nos per floor	200
Centralized automatic hookup Garbage collection bin- 15 Cum	1 No near Velachery gate	1

The Field Implementation & Monitoring Committee frequently monitors the process of organic and inorganic waste collection to ensure effective management of wastes.

14. As regards, the **Management of Radioactive waste Generation**, it is as follows;

- Radio active compounds were used in the department of Biotechnology in the Year 2012-13.
- NAME OF THE RSO: - Professor RAMA S Verma, Department of Biotechnology IITM Chennai 600036.
- The radioactive compounds were kept in separately for a Six half lives and then it was discarded as per AERB (Atomic Energy Regulatory Board) Norms.
- Half life of Radioactive Iodine is 60 days and after six life it is ineffective means no detectable radioactivity in the disposed as normal waste.

15. As regards, the **Bio-medical Waste Generation and effective management**, it is as follows

- The Bio-medical waste is disposed through through TNPCB authorized vendor M/s GJ Multiclave (India) Pvt Ltd.

- The description of wastes and their mode of disposal are as follows:

S. No	Category No	Description	Quantity Generated (kgs/day)	Mode of Disposal
1.	1	Human Anatomical Waste	2.3 kg	Incineration
2.	2	Animal Waste	-	Incineration
3.	3	Microbiology & Biotechnology Waste	600 gm	Incineration
4.	4	Waste Sharps (needles, Syringes, scalpels, blades, glass, etc.)	750 gms	Auto Clave + Shredding + Landfill
5.	5	Discarded medicines and Cytotoxic drugs (Outdated, contaminated and discarded medicines)	600 gms	Incineration
6.	6	Soiled Waste (Cotton, dressings, soiled plaster, casts, liner, beddings and others)	1.5 kg	Incineration
7.	7	Solid Waste (Waste generated from disposal items)	900 gms	Auto Clave + Shredding
8.	8	Liquid Waste	615	Effluent Treatment
9.	9	Incineration Ash	NIL	-
10.	10	Chemical Waste (Chemicals used for disinfection etc.)	4.5	Effluent Treatment

16. As regards **Construction & Demolition (C&D) Waste Management**, it is as follows;

- ❖ All construction sites are properly barricaded to isolate the construction activity.
- ❖ A site waste management plan has to be prepared by the contractor prior to the commencement of building construction. It includes the designation of appropriate waste storage areas, collection and removal schedule, identification of approved disposal site, and a system for supervision and monitoring. The contractor is responsible for managing the wastes and frequently being monitored by IIT Madras.
- ❖ Special attention is being given to minimize and reduce the quantities of solid waste produced during site preparation and construction. To reduce organic waste, softer vegetation is being composted onsite and used for soil amendment during landscaping.
- ❖ Most of the construction materials like soil, bricks, concrete is being reused in the backfilling, road construction and sub-grade repair etc. works. Metals, wood scraps & bitumen junks is being recycled either within site or outside with help of the local authority.

- ❖ Vegetation and combustible waste are not be burnt on the site. Reusable inorganic waste (e.g. excavated sand) are stockpiled away from drainage features and used for filling the areas wherever necessary.

Prevention and control of garbage thrown by strangers/outside residents staying near to IIT Madras compound wall :

17. IIT Madras is doing solid waste management in the campus in a meticulous way with full co-operation and support from local authorities, Chennai Corporation and TNPCB. However, the garbage thrown by outside residents staying very close to IIT Madras compound wall was a challenging task. In order to protect the environment and bio-diversity of the campus, IIT Madras has spent a huge amount to provide double fencing and carrying out continuous cleaning of garbage thrown by outside residents.

18. Some of the Problems faced by IIT Madras are as under:

Dumping of garbage by the outside residents staying very close to compound wall.

- ❖ The garbage gets regenerated within a hour after thorough cleaning of the premises.
- ❖ Many building were constructed abutting the compound wall which makes them dispose the garbage inside IIT Madras through the terrace/Windows
- ❖ Deer movement is normal along IIT Madras compound wall. Therefore, IIT Madras has entered into an annual maintenance contract for regular cleaning of the garbage.
- ❖ Raising of compound wall beyond certain height has become impractical and structurally not feasible, since the original foundation is not designed for that.
- ❖ Throwing of liquor bottle/food packs by unknown persons from outside the compound wall into IIT Madras.
- ❖ Many buildings are constructed outside abutting IITM along IIT Madras compound wall, without any proper setback which resulted with illegal disposal of garbage into IIT Madras campus.
- ❖ Cut Tender Coconut and Garbage thrown from outside by vendors close to Sardar Patel/Sriram Nagar road.

19. The Actions initiated by IIT Madras to mitigate the issues are as follows (photographs enclosed):

Page No10
Corrections:

- ❖ Erection of double fencing inside IIT Madras campus to prevent deer eating the garbage thrown by outside residents staying close to IIT Madras compound wall
- ❖ Raising the existing compound wall with brick work to close windows and openings provided by outside residents staying adjacent to IIT Madras compound wall
- ❖ Providing Galvalume sheet to raise the compound wall. This will prevent outside road users from throwing garbage into IIT Madras campus
- ❖ Providing nylon net to prevent garbage entering from building which are located little away from IIT Madras compound wall
- ❖ Installation of CCTV cameras in critical locations
- ❖ Deploying additional security personnel and tightening of security to prevent unauthorized public movement along compound wall and erection of watch tower at critical locations to monitor illegal garbage dumping.
 - Raising the existing compound wall with brick work (where raising is not done / partially done where garbage generation is high) to prevent garbage throwing from lower floors of residents staying outside the IIT Madras campus.

20. In addition, the following actions have been taken keeping in mind the need for **protection of wild life in campus:**

1. Sign boards erected in significant areas displaying ban on plastics.
2. Trenches covered with specially designed SFRC slabs with narrow openings to avoid hooves of deers getting stuck.
3. Fencing to prevent accidental fall of deer into deep portion of lake inside the campus.

21. The **Steps and measures taken by the Institute to dispose wastes in respect of Covid 19 positive and Quarantine cases** as under:

- ❖ IIT Madras has given two entire hostels – Tamraparanai and Mahanadhi with room capacities of about 427 and 416 Nos. respectively were handed over to the Greater Corporation Chennai (GCC) to be used as Covid 19 quarantine/isolation centres. The entries to the hostel were cordoned off and was handed over to GCC for establishing Covid quarantine facilities. The entire process of Solid Waste Management on the above usage was done by Chennai Corporation themselves.

- ❖ Waste from residents and hostels of Covid 19 positive cases reported locations were taken away by Chennai Corporation for further disposal through authorized bio-medical waste disposal agency and as per the SoP issued by the Govt.
- ❖ Waste from quarters and hostels of residents who were quarantined for various reasons like travel rules and contact with Covid positive person were collected through separate agency using full suite PPE kit, packed in a bio-degradable cover and handed over at Chennai Corporation yard through Corporation authorized vendor
- ❖ The residents of quarantined were issued with two different colors of bio-degradable garbage bags for source segregation of bio-medical waste and other waste
- ❖ The operational staff was used only for this task and not engaged for any other work
- ❖ The collection and disposal of waste was done meticulously and directly monitored by a High Level Committee on day to day basis
- ❖ Surrounding of quarters of residents who were tested positive was sanitized twice in a day.
- ❖ The Trucks used in the operation were sanitized after each collection drive.
- ❖ The entire collection and disposal process was well coordinated with the Corporation officials to contain the spread of the disease to other residents.
- ❖ The details of expenditure incurred by the Institute in the Solid Waste Management Process is reflected below:

S.No	Description of work	Appx. amount In Rupees
A	Double fencing and raising compound wall	52 lakhs
B	Forest cleaning	18 lakhs per annum
C	Road side cleaning and dust bin clearance	10 lakhs per annum
D	Charges towards Security personnel deployed along compound wall to monitor illegal throwing of garbage	36 lakhs per annum
E	Fencing around lake to prevent accident fall of deer into deep portion of lake	8 Lakhs
F	Maintenance of open grazing area to act as a fodder for deer and blackbuck	5 Lakhs per annum

It is therefore prayed that this Hon'ble Tribunal may be pleased to take on record the above further report relating to the action taken with regard to Solid Waste Management, control of stray dog menace based on the recommendations of the Permanent Committee constituted by this Hon'ble Tribunal. It is prayed that this Hon'ble Tribunal may be pleased to consider the matter of **control of** feral dogs in the campus and authorize / empower the Permanent Committee to take suitable action to protect the wild life more specifically the cheetals and black bucks as deemed fit and proper.

Solemnly affirmed at Chennai
on this 04th day of March 2021
and signed his name in my presence



Registrar, IIT Madras

BEFORE ME

ADVOCATE: CHENNAI

**BEFORE THE HON'BLE
NATIONAL GREEN TRIBUNAL,
SOUTHERN ZONE AT CHENNAI**

**(UNDER S.14(1) OF THE
NATIONAL GREEN TRIBUNAL
ACT).**

**Application No. 107 of 2017
(SZ)**

**FURTHER REPORT FILED ON
BEHALF OF THE SECOND
RESPONDENT**

**M/s MENON, KARTHIK,
MUKUNDAN & NEELAKANTAN,
Advocates**

Counsel for 2nd Respondent