

**INTEGRATED SOLID WASTE MANAGEMENT SYSTEM FOR AMBATTUR,
MADURAVOYAL, VALASARAVAKKAM, THIRUVERKKADU AND
POONAMALLEE MUNICIPALITIES**



**EXECUTIVE SUMMARY
JULY – 2010**

**அம்பத்தூர் நகராட்சி
AMBATTUR MUNICIPALITY**

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EXECUTIVE SUMMARY

THE PROJECT

To establish 455 Tons per Day, Municipal Solid Waste (MSW) Processing Plant for Conversion of MSW to Compost and Refuse Derived Fuel, Recovery of Dry Recyclable Materials, Making of Eco Bricks and Scientific Land filling of Non degradable Material at Kuthambakkam, Poonamallee Taluk, Tamil Nadu as per MSW Rules 2000.

Name of Project: Integrated Municipal Solid Waste (455 TPD) Processing Facility for Conversion of MSW to Compost and Refuse Derived Fuel, Recovery of Dry Recyclable Materials, Making of Eco Bricks and Sanitary Land filling of Non degradable Materials at Kuthambakkam.

Location / Site: Kuthambakkam Village, Poonamallee Taluk, Thiruvallur District, Tamil Nadu.

Size of the Project: 455 TPD MSW processing facility at 65 acres of land.

Expected Cost of the Project: Rs. 55.00 Crores.

Project:

Contact Information: Commissioner,
Ambattur Municipality,
Chennai – 600 053.

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TECHNOLOGY TO BE USED:

Integrated MSW processing through aerobic bio-composting, Refuse Derived Fuel, Recovery of Dry Recyclable Materials, Making of Eco Bricks from inert materials, Sanitary landfilling of rejects.

PROJECT PROPONENT:

Ambattur Municipality along with Maduravoyal, Ponamallee, Thiruverkadu & Valasaravakkam Municipalities.

TECHNOLOGY STATUS:

In accordance with MSW processing and handling rules 2000. Also as per the recommendation of Supreme Court Technical Committee and Inter-Ministerial Task Force under the Ministry of Urban Development, New Delhi, “Aerobic Bio Conversion under controlled conditions to recover manure and Refuse Derived Fuel from Municipal Solid Waste and inert processing to civil bricks.

The Project has two-way integration – integration of all aspects of management of Municipal Solid Waste as well as integration of processing technologies so as to result into minimum inerts to the disposal site (landfill).

PROCESSING OPERATION:

The proposed integrated solid waste management project shall consist of the following components:

- ♦ **Primary collection of MSW: Implementation of Door-to-Door** collection of MSW (in all respective Municipalities).
- ♦ **Transportation of MSW:** After collection, MSW will be transported in the closed/covered vehicles to the processing and disposal site at Kuthambakkam.
- ♦ **Transfer Stations:** The Municipal Solid Waste (MSW) collected from the five municipalities will be temporarily stored in the respective transfer stations and transported in larger containers to landfill site. Secondary segregation will be done to remove the recyclable materials. The dry materials like glass, metals and plastics shall be sold to authorized recyclers.

Waste Receiving and processing treatment throughout the year. The processing operation will be as per following:

MSW is to be processed for compost and RDF recovery before final disposal into landfill site. Only inert or processing rejects to be land filled which is to be in range of 15-20% of total waste transported to the site. Processing and disposal site is to be developed at Kuthambakkam. Processing complex would comprise of the following:

- **RDF Plant to handle 91 TPD MSW:** Mixed MSW would be converted into Refuse Derived Fuel (RDF) in the RDF Plant to produce 49.1 TPD, RDF.
- **Compost Plant to handle 227.5 TPD of Organic waste:** Organic components of MSW segregated will be treated in the compost plant to produce manure at the rate of 109.1 TPD
- **Recovery of dry recyclable materials:** The plastic materials will be segregated and recycled. The process involves initial segregation of LPDE, HDPE, PVC and PET items as these materials will have different properties and reusability. This will generate 34.15 TPD Recyclable materials.
- **Eco Bricks:** Inert materials will be used for making Eco bricks and eco paver blocks, which shall produce 13.65 TPD of Eco bricks.

- **Sanitary Landfill:** The rejects from RDF, Compost plant & reject materials from eco bricks manufacturing will be taken to Sanitary Landfill. The capacity of the landfill shall be 80.65 TPD

The Layout plan of the proposed Municipal solid waste Processing Centre is enclosed as Annexure VI of EIA Report.

The Salient features of the project for processing & disposal of MSW at Kuthambakkam site are:

- Total Project Cost: Rs.55 crores
- Land area: 65 Acres
- Provision for Total MSW Processing Capacity 1140 TPD (for year 2030)
- Total MSW processing capacity 455 TPD (for year 2015)
- Compost Plant Capacity 109 TPD
- RDF capacity 49 TPD
- Water Requirement: 86 KLD
- Source of water: Ground Water

The Connectivity to the site is given in **Figure 3.2 of the EIA Report.**

DETAILS OF TRANSFER STATIONS

Transfer Station Location	Municipality	Area in Sqm.	Survey No.
Attipet	Ambattur	21550	29
Maduravoyl	Maduravoyl & Valasarvakkam	5900	446
Thiruverkadu	Thiruverkadu	11130	22
Near Burial Ground	Poonamallee	6015	219

QUANTITY OF WASTE HANDLED IN EACH TRANSFER STATIONS FOR YEAR 2015

S.No.	Solid Waste Details	Transfer Station at			
		Ambattur	Poonamallee	Maduravoyal*	Thiruverkadu
1.	Total Municipal Solid Waste Generation in TPD (MSW generation /day @ 552 gpcd)	318	41	70	26

2.	Organic Waste in TPD (@ 50%)	159	20.5	35	13
	Dry Recoverable & Combustible in TPD (@20 %)	63.6	8.2	14	5.2
3.	Recyclable Waste in TPD (@ 15%)	47.7	6.15	10.5	3.9
4.	Inert Waste in TPD (@ 15%)	47.7	6.15	10.5	3.9

* Common Transfer Station for Maduravoyal & Valasaravakkam Municipality

SITE SALIENT FEATURES

Selection criteria	Details	
Latitude & Longitude	Latitude 13°02'06" N , Longitude 80°01'38"E	
Elevation above Mean Sea Level	20 Mts.	
Climatic Conditions	Sumer	Max. Temp. 37.9 Min. Temp. 25.5
	Winter	Max. Temp. 23.7 Min. Temp. 18.5
	Rainfall Intensity: 62 mm/Hr Average Humidity 68%	
Land availability	65 Acres	
Surrounding land use	Grazing Poromboke	
Nearest Highway	NH 4 which connects Chennai & Bangalore	
Nearest Railway station	Thirunindravur (11 km)	
Nearest airport	Chennai Airport- 17 Kms	
Nearest Town / City	Sriperumbudur -12 Km Chennai - 20 Kms Thiruvallur – 18 Kms	
Topography	Plain	
Archaeologically important places	Nil in 15 km radius	
National parks/ Wildlife Sanctuaries	Nil in 15 km radius	
Reserved/ Protected Forests	No Reserved Forest blocks in 10 km	

Selection criteria	Details
	radius
Seismicity	The study area falls under seismic zone-II
Water source	Bore well
Defense Installations	Nil in 10 km radius
Nearest Port	Chennai

ENVIRONMENTAL SETTING OF THE STUDY AREA

Meteorology	The meteorological data were obtained from the regional meteorological center located at Airport, Chennai. The meteorological parameters include, wind speed, wind directions and other information, viz. humidity, rainfall, temperature. The annual temperature observed of maximum daily is 37.9°C and that of minimum daily temperature is 25.5°C. During the study period, the sky was clear and the wind direction was from South east.
Ambient Air Quality	Ambient air quality was monitored at five stations. Selection of air quality monitoring station was done as per MoEF guidelines for conducting EIA study. One station was set up at the project site (core Zone) and two are in upwind direction and two are in down wind direction of the project site. The pollutant concentration levels of NO _x , SO ₂ , and RPM/PM ₁₀ & SPM were measured. It was observed the concentration levels of SPM, RPM, NO _x and SO ₂ were well within the prescribed limits.
Noise Levels	Noise monitoring was carried out at different locations at and around the site. The noise levels at day & evening time noise levels were recorded at five locations (2 Industrial & 3 Residential). The noise levels at residential areas slightly exceed the limits.

Water Quality	The assessment of water quality in the study area was done and compared with the drinking water standards prescribed by CPCB. After studying the drainage pattern of the study area and proximity to the site, 1 sample of surface water was collected from Chembarambakkam lake and the other four are ground water. The TDS level of Ground water collected from site and Chembarambakkam lake are well with in drinking water standards. For the Ground water samples collected at Attipet, Maduravoyal, Parivakkam & Thiruverkkadu, the TDS levels are exceeding the limits and Iron content is exceeding the limit in the sample collected at Parivakkam,
Soil	To assess the baseline soil quality in the study region, four soil samples were collected and analyzed at five locations. The pH of soil at all the locations is between 5 to 8 which is ideal for plant growth. Electrical Conductivity is very low which indicates the soil is non saline.
Socio Economy	The study area covers the villages of Poonamalee Taluk. The number of households in Poonamallee town is 9390. There are 16 Industrial Estates in Thiruvallur District. Many educational institutions are found in the district.

ENVIRONMENTAL ISSUES COVERED AS A PART OF THE PROJECT:

Environmental impact due to the construction and operation stages of the project were predicted quantitatively using engineering judgment and best management practices. Adequate environmental management measures will be incorporated during the entire planning, construction and operation stages of the project to minimize the environmental impacts and assure sustainable development of the area.

Construction Phase:

- The Construction equipments will be maintained properly for emission standards
- Proper drainage shall be maintained by construction of Soak pits so that the impact on underground water & soil are minimized.
- Herbal insecticides will be sprayed on the solid wastes to prevent odour problem.
- Since the system is working on negative pressure, clean air is circulated.
- All the wastes shall be processed within 12 hours.
- Ear muffs will be provided for workers to protect from noise.
- Sprinklers will be placed along the roads to prevent dust.
- Vehicles will be checked for emission standards.

Operation Phase

- The wastes shall be covered & transported to processing centre
- The exhaust from RDF shall pass through cyclonic scrubber to remove the dust & clean air will pass through the stack.
- Green belt will be developed & maintained to reduce noise.
- Rainwater Harvesting shall be practiced
- Storm water shall be collected through proper drainage to reduce leachate generation.
- Adequate fire fighting equipments shall be made available.
- Personal Protective Equipments shall be made available for workers.
- Leachate will be collected through HDPE pipe from windrow pads and landfill site and stored in leachate collection pond. The collected leachate will be used on windrow pads for decomposition of compost and excess Leachate will be treated in Effluent Treatment Plant.
- The leachate collected from the transfer stations will be collected separated in a pond and discharged in the Sewage Treatment Plant available in each municipality.

ENVIRONMENTAL MANAGEMENT SYSTEM

For the effective implementation of the EMP, an Environmental Management System (EMS) will be established at the proposed project. The EMS will include the following:

- An Environmental Management cell
- Environmental Monitoring Program
- Personnel Training
- Regular Environmental Audits and Corrective Action
- Documentation – Standard operating procedures Environmental Management
- Plans and other records.

ENVIRONMENTAL CONTROL COST

For recurring the environmental works, about **Rs. 1366 Lakh** per year will be provided to meet the expenditure to carry out effectively the necessary control measures described above.

CONCLUSION

All possible environment aspects have been adequately assessed and necessary control measures have been formulated to meet statutory requirements. Thus implementing the proposed project will not have any appreciable negative impacts. Moreover, the landfill area requirement will reduce significantly as the about 80% to 85% of solid waste will be converted into usable form and only inerts (15-20%) would be sent for disposal at landfill site. This would save upon the future requirements of area for land filling.

**PROFESSIONALS INVOLVED IN PREPARATION OF ENVIRONMENTAL IMPACT
ASSESSMENT REPORT AND ENVIRONMENTAL MANAGEMENT PLAN:**

Name of Professional	Qualification	Yrs of Experience	Tasks
Dr. R.K.Jayaseelan	Ph. D.(Ground Water Modelling)	35 Yrs	Team Leader; Responsible for entire EIA report
T. Anand Mohan	M.S. (Environmental Engineering)	19 Yrs	Process Engineer, Environmental Management Plan
Dr.M.Sangeetha	PhD (Environmental Sciences)	3 Yrs	Solid Waste Management process description
V V S N Murthy	M.Tech (IIT) (Water & Environmental Engg)	5 Yrs	Process Design of Compost Plant and Sanitary Landfill
Srinivas Avvaru	B.E. CIVIL	7 Yrs	Process Design of Compost Plant and Sanitary Landfill
S.Sivakumar	B.Sc. Chemistry	13 Yrs	Quality control of the Reports, Monitoring Plan
A.Robson Chinnadurai	M.Sc.Chemistry	10 Yrs.	Sampling & Analysis of Ambient Air Quality, Water, Noise & Soil
Ramaa Prakash	M.Sc. Environmental Sciences	5 Yrs.	Socio Economic& Flora Fauna Study, Environmental Impact Assessment, Mitigation Measures, Report Preparation
Sathya Sampath	M.Sc. Environmental Sciences	2 Yrs.	Environmental Legislation, Flora Fauna Study, Mitigation measures, Report Preparation
J.Rajaganapathy	M.E.Environmental Management	1 Yr.	Environmental Monitoring, Monitoring Plan
R.Ranga Raj	M.E.Environmental Engineering	6 Months	Environmental Monitoring, Base line data collection.