Mumba Metropolitan Region Development Authority Sustainable Urbanisation and World Cities Conference

Development of Regional Integrated Municipal Solid Waste Management Facility at Taloja Village: Usatane, Taluka: Ambarnath, District: Thane 25th May 2015



Mumbai Metropolitan Region - Overview



Particulars	India	Maharashtra	MMR	MCGM
Pop (Cr) 2011 Census	121	11.2	2.3	1.2
Area Sq km	32,87,240	3,07,713	4,253	438
Density - Persons per sq km	382	370	5,361	28,310
Urban Pop (Cr)	28.6	5.0	2.1	1.2
Urban Pop in %	23%	45.23%	94%	100%
GDP Per Capita (Rs/annum) 2012-13	74,497	1,17,800	1,27,211	1,54,244
GDP Per Capita (Dollar/annum)	1241.62	1963.33	2120.18	2570.73







Sr. No.	District	Taluka	Total Area (Sq.km.)	Total Population (Census 2011)
A	Mumbai & Mumbai Suburb		437.71	12442373
	Sub-Total -A		437.71	12442373
В	Palghar	1. Vasai	474.91	1323285
	Sub-Total -B		474.91	1323285
		1. Thane	340.49	3787036
		2. Bhiwandi	695.35	1141386
		3. Kalyan	302.68	1565417
С	Thane	4. Ulhasnagar	13.00	506098
		5. Ambernath	322.23	565340
	Sub-Total - C		1673.75	7565277
		1. Alibag	226.41	148979
	Deired	2. Panvel	550.73	743528
р		3. Karjat	316.97	146934
	Naigau	4. Khalapur	215.51	153328
		5. Pen	164.94	120348
		6. Uran	192.62	160303
	Sub-Total – D		1667.18	1473420
E	Thane & Vasai Creek area in MMR Region		101.00	
	Grand Total		4354.50	22804355



- Regional Planning Authority for MMR
- Special Planning Authority for certain notified areas within MMR.
- Development Financing Agency for ULBs within MMR.
- Nodal Agency for Centrally Sponsored Schemes.
- Co-ordination Agency for Infrastructure
 Projects implemented by different agencies.
- Implementing Agency for various infrastructure projects within MMR with Transport
 Infrastructure as the primary focus.







MSW Rules 2000 Compliance Status - 8 Municipal Corporations in MMR

Sr. No.	Name of the Corporation	Population (In Lacs) In 2011	Generation of MSW (MTPD) as of 2011	Present Status of disposal sites w.r.t. MSW (M&H) Rules, 2000
1	Mumbai	137.03	7907	Processing/ Landfilling Contracts Awarded
2	Thane	16.25	826	Open Dumping
3	Bhiwandi-Nizampur	8.04	315	Open Dumping
4	Kalyan-Dombivali	15.23	625	Open Dumping
5	Ulhasnagar	5.70	365	Open Dumping
6	Mira-Bhayandar	9.10	498	Processing Started. No Sanitary Landfill
7	Navi Mumbai	13.94	777	Processing and Sanitary Landfill
8	Vasai – Virar	10.16	319	Processing, Landfill under development
	Total	215.45	11632	

Source : Waste Characterization Study of MMR – By NEERI 2011

* Status Report of MPCB dated 01/04/2014.



MSW Rules 2000 Compliance Status - 9 Municipal Councils in MMR

Sr. No.	Name of the ULB	Class of the ULB	Population (In Lacs) In 2011	Generation of MSW (MTPD) as of 2011	Present Status of disposal sites w.r.t. MSW (M&H) Rules, 2000
1	Kulgaon- Badlapur	B & C Class	2.47	63	Open Dumping
2	Ambernath	A Class	2.73	108	Open Dumping
3	Alibaug	B & C Class	0.26	9	Open Dumping
4	Karjat	B & C Class	0.42	17	Open Dumping
5	Khopoli	B & C Class	0.78	29	Open Dumping
6	Panvel	A Class	1.39	39	Open Dumping
7	Matheran	B & C Class	0.05	7	Open Dumping
8	Pen	B & C Class	0.55	20	Open Dumping
9	Uran	B & C Class	0.27	8	Open Dumping
10	CIDCO	Development Agency	3.68	93	Processing and Sanitary Landfill
	Total		12.60	393	

Source : Waste Characterization Study of MMR – By NEERI 2011.



ULB	Population (2011) in Lacs	MSW Generation (2011) MT Per Day
8 Mun. Corporations	215.45	11,632
9 Mun. Councils and CIDCO	12.60	393
Total for MMR 2011	228.05	12,025 (0.52 kg per capita)
Projected 2035	370.11	24,050 (0.65 kg per capita)
Projected 2051	502.03	38,218 (0.76 kg per capita)

* Present Per Capita generation is assumed as 0.45 Kg.



Municipal Solid Waste (Management & Handling) Rules–2000 and Challenges to ULBs

Obligatory Functions of ULBs	Challenges Encountered by ULB's	
Collection of MSW – Organize House to House collection, notify waste collection schedule, prohibit littering	 Scarcity of Land for MSW disposal Lack of Reservation in Development Plan Complex Land allocation procedures Lack of long-term Planning and Strategy Rapid Urbanization with rise in per capita waste generation 	
Segregation – Promote Recycling or Reuse of Segregated materials and undertake phase programme through Community participation		
Storage – Establish and maintain storage facilities which do not create unhygienic and insanitary conditions – User friendly and aesthetically acceptable – accessible to users – Manual handling to be Prohibited		
Transportation – Use of Covered Vehicles – Avoid exposure to Public – Daily pick up of waste - Avoid over flowing – Avoid multiple handling of waste	 Lack of expertise and exposure to global technologies. 	
Processing – Adopt suitable combination of technologies to minimize landfill – composting, vermi composting, anaerobic digestion, biological stabilization, recycling, incineration, etc. be adopted	 High Capital Cost to develop waste disposal in landfill. Uneconomical for small scale landfill 	
Disposal – Landfilling for non bio degradable inert waste not suitable for recycling and biological process.	 No priority in lending by financial institutions NIMBY (Not In My Back Yard) syndrome 	

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Merits of Regional Landfill Facility (RLF) over ULB sites

- ✓ Full compliance of MSW Rules 2000
- Full compliance of Emission Standards and Environmental Regulations
- ✓ Lower administrative costs
- Better Quality of monitoring
- ✓ Less local resistance
- ✓ Ability to expand the scale
- ✓ Use of land having low intrinsic value
- ✓ Sustainable operation for the project life
- ✓ Optimized cost due to economies of scale
- Comfort to ULBs and realize potentials of Prime Lands within ULBs
- Better quality of life for citizens within ULBs



Sr. No.	Name of the ULB	Transfer Station Site
1	Thane M.C. (TMC)	Daighar, Shil- Phata
2	Bhiwandi-Nizampur M.C. (BNMC)	Near Octroi Post, Kalyan by pass road
3	Kalyan-Dombivali M.C. (KDMC)	Khambal-pada, Dombivali
4	Ulhasnagar M.C. (UMC)	Not decided
5	Ambarnath M.Council	
6	Kulgaon-Badlapur M.Council	Chikhloli



ULBs in MMR – Location of Taloja Land Fill Site

	LEGEND	
District		
1	Mumbai	
2	Mumbai Sub Urba	n
3&4	Thane & Palghar	
4	Raigad	
Aunicip	al Corporation	
1	Greater Mumbai	
2	Thane	
3	Kalyan-Dombivali	
4	Ulhasnagar	
5	Mira-Bhayander	
6	Bhiwandi-Nizamp	ur
7	Navi-Mumbai	
8	Vasai-Virar Corpo (Vasai, Virar, Nala Navghar)	ration asopara,
<i>Aunicip</i>	al Council	
1	Ambernath	
2	Kulgaon-Badlapur	•
3	Alibaug	
4	Pen	
5	Panvel	
6	Uran	
7	Matheran	

Distri

Muni

Khopoli

Karjat

Transfer Stations

Muni



- To resolve the acute problem of ULB's in disposal of Municipal solid waste in compliance with Solid Waste Rules-2000.
- To develop State of the Art, Environmental friendly, Sustainable innovative project
- To provide relief to citizens of ULBs from unhygienic Environment due to open dumping and ensure healthy civic life.

Assured Waste quantity from 6 ULBs for Taloja RLF Project

Sr. No	Name of ULB	Assured Waste-2012/ Total Waste- 2011 Qty. TPD	Population (As per census 2011) In Lacs	Location of Transfer Station proposed by ULB	Ownership of the land	Area allocated for Transfer Station in Ha. approx	Distance in KM. Approx. from Transfer Stn. to RLF, Taloja
1	Thane Mun. Corpn.	600/826 73%	16.25	Diaghar, Shil- Phata Kalyan Road	Govt. land transferred to TMC	1.5	13
				(Survey no. 19,20)	(19 Ha.)		
2	Bhiwandi- Nizampur Mun Corpo	350/315 100%	8.04	Near Octroi Check Post, Kalyan Bypass Road	Acquired Land for Octroi & partly to be	1	36
	Mun.Corpn.			(C.S.no.203)	acquireu.		
3	Kalyan-Dombivali Mun.Corpn.	550/625 80%	15.23	Khambalpada, Near Tata Power, Dombivali	Land of KDMC- Parking area of Refuse vehicles	1.5	17
4	Ulhasnagar Mun.Corpn.	280/365 77%	5.70	Existing Dumping Site	Ulhasnagar Municipal Corporation	1	18
5	Ambarnath Mun. Council	55/108 51%	2.70	C.S. No. 132,	Govt. land transferred to Ambarnath Mun	0 8 Ha	19
6	Kulgaon-Badlapur Mun.Council	35/63 55%	2.47	Chikhloli	Council (19 Ha.)	0.0114.	
	Total	1870 73%	50.39				



Domain Expertise

Date	Agency	Deliverables		
Feb.' 09	NEERI	In 2011, NEERI submitted following:		
		1. Waste Characterization Study (NEERI)		
		2. Transport Infrastructure Assessment (NEERI + IIT)		
		3. Techno Commercial Assessment (NEERI + TCE)		
		4. Financial Plan (NEERI + KPMG)		
		5. Institutional Mechanism and Policy (NEERI + NSWAI)		
Sept.'10	KPMG	Transaction Advisor for Bid Preparation and Bid Process		
		Management		
Aug.' 11	NEERI	Technical Consultant for Technical inputs for the bid prepared		
		by KPMG		
Nov.' 11	Link	Vetting of Bid documents, Preparation of Waste Supply Agreement		
Aug.' 13	Legal	Finalization of Concession Agreement & Assistance in Financial		
		Closure		



Continued...

Plant Location and Design	Climatic Environmental & Social Impact	Contractual Agreement
• Located in a sparsely populated zone with several interactions resulting of buy - in of locals	 EU Emission norms Meets MSW 2000 norms High standards to ensure long 	Agreement has strict and well defined penalty and emission control norms
	term sustainability	• Fee escalation well defined
Waste Quality & Quantity	Project Development	Operation and Maintenance
 Segregation of waste (MRF) Multi-technology Modular Design plants Enable small ULBs to participate 	 Environmental Clearance Obtained Multiple Site visits gained local population buy-in 	 Nomination of Independent Engineer Provision of scientific landfill and post closure maintenance
Collection & Transport System	Promoter Background	Political & Administrative aspects
Norms regarding waste handling and transportation specified	 International bidding process 3 yrs Operational experience High Net worth criteria 	 MMRDA (A development body) – single point contact





Salient Features

- Regional facility involving 6 ULBs
- Compliant with MSW 2000 Rules
- Compliant with Emission standards of EU
- Multi technology project competent to handle different types of waste
- International bidding process based on Planning Commission's principles



Waste flow Diagram





- The Regional Facility is being created by MMRDA with long term participation of the participating ULB's.
- To have firm association it is essential to issue directives to the ULB's under "Maharashtra Municipal Corporations and Municipal Councils (Third Amendment) Act-2012" dated 20.12.2012
- The **ULB's** who have given the **consent to join the Regional facility** at Taloja:
 - Needs to obtain GB's Approval
 - Execute "Waste Supply Agreement" with MMRDA
- The Government Lands to be transferred in the name of MMRDA by the State Government, supporting the acquisition of private lands between two parcels of Govt. Lands



Economics of Regional Land Fill Vs Individual Land Fill

Sr. No.	Parameter	Individual (Within ULB's)	Regional (Outside ULB's)
1	Partnership with ULB's	No	Yes
2	Site Location	Within ULB's	Regional Site
3	Size of Site	Small < 200-300 TPD	Large Min 200-300 TPD
4	Buffer Zone Width	Small	Large
5	Nuisance to People	Considerable	Minimum
6	Transportation Cost	Less than Regional	More than Individual
7	Environmental Friendly	Less	More
8	Land Saving in ULB's	No	Yes
9	Optimum use of Machinery	No	Yes
10	Hiring Skilled Manpower	No	Yes

Source : Pre- feasibility Study Report July 2008 by AIILS



Economics of Regional Land Fill Vs Individual Land Fill

Sr. No.	Parameter	Individual (Within ULB's)	Regional (Outside ULB's)
11	Saving in Cost	No	Yes
12	Minimum Population	Nil	Min. 3 Lakhs or More
13	Labor Cost / Ton	Higher than Regional	Lower than Individual
14	NIMBY Syndrome	Yes	No
15	Public Objection	Sever	Less
16	PPP Possibility	Moderate	High
17	Ease of Disposal	Less	High
18	Tipping Fee Per Tone	Less due to less Transport Cost	More due to Added distances up to site
19	Economy of Scale	Less	High
20	Efficiency	Less	High

Source : Pre- feasibility Study Report July 2008 by AIILS



Financial Analysis of Individual Vs Regional Land Fill

Sr. No.	Parameter	Individual Land Fill of 20 TPD	Regional Land Fill of 200 TPD
1	Site Development / Ton	Rs. 39.83	Rs. 4.06
2	Equipment / Ton	Rs. 188	Rs. 25.34
3	Construction of Land Fill / Ton	Rs. 579	Rs. 135
4	Operation & Maintenance		
	(i) Equipment	Remain Idle	Optimally Used
	(ii) Manpower	Remain Idle	Optimally Used
	(iii) Consumables	More Wattage	Optimally Used



THANK YOU

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