

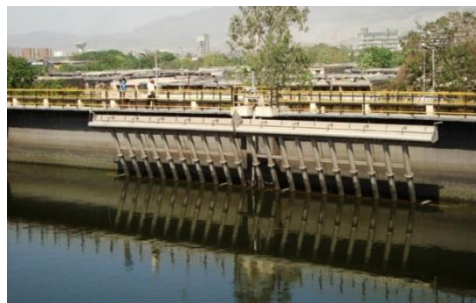
MAHARASHTRA POLLUTION CONTROL BOARD



Environmental status and revised action plan for prevention and control of pollution of Industrial cluster

Navi Mumbai

May 2017



Maharashtra Pollution Control Board Kalpataru Point, Opposite Cine Planet
Cinema, Near Sion Circle, Sion (E) Mumbai – 400 022.

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INDEX		
S. No	Contents	Page No.
1	INTRODUCTION	
1.1	Area Details including brief history (background information)	5
1.2	Location	7
1.3	Digitized Map with Demarcation of Geographical Boundaries and Impact Zones	8
1.4	CEPI Score (Air, Water, Land and Total)	10
1.5	Total Population and sensitive receptors (hospitals, educational institutions, courts, etc.) residing in the area comprising of geographical area of the cluster and its impact zone (minimum 2 km)	10
1.6	Eco-geological features Impact Zones [the area comprising of geographical area of the cluster and its impact zone (min.2 km)]	11
	1.6.1 Major Water Bodies (Rivers, Lakes, Ponds, etc.)	11
	1.6.2 Ecological parks, Sanctuaries, Flora and Fauna or any eco-sensitive zones	11
	1.6.3 Buildings or Monuments of Historical / archaeological /religious	11
1.7	Industry classification and distribution (no. of industries per 10 sq.km area)	11
	1.7.1 Highly Polluting industries (17 categories)	12
	1.7.2 Grossly Polluting industries	12
	1.7.3 Red category industries	12
	1.7.4 Orange category industries	12
	1.7.5 Green category industries	12
	1.7.6 White category industries	12
2	WATER ENVIRONMENT	14
2.1	Present status of water environment supported with minimum one year	14
	2.1.1 Water bodies/effluent receiving drains in the area important for water	14
	2.1.2 Present levels of pollutants in water bodies/effluent receiving drains / ground water (routine parameters, special parameters and water toxics relevant to the area in three categories – known carcinogens, probable	14
	2.1.3 Predominant sources contributing to various pollutants	29
2.2	Sources of water pollution	31
	2.2.1 Industrial	31
	2.2.2 Domestic	31
	2.2.3 Others(Agricultural runoff, leachate from MSW dump, illegal dump site etc.)	31
	2.2.4 Impact on surrounding area (outside the CEPI Area) on the water	32
2.3	Details of Water Polluting Industries in the area/cluster	32
2.4	Effluent Disposal Method- Recipient water bodies etc.	33
2.5	Quantification of wastewater pollution load and relative contribution by	33

2.6	Action Plan for compliance and control of pollution	33
2.6.1	Existing infrastructure facilities – water quality monitoring network, ETPs, CETP, Sewage Treatment Plant of industry (STPs), surface drainage system, effluent conveyance channels/outfalls, etc.	33
2.6.2	Pollution control measures installed by Industries	38
2.6.3	Technological Intervention	39
2.6.3.1	Inventorisation of prominent inds with technological Gaps	39
2.6.3.2	Identification of low cost & advanced cleaner technology	39
2.6.4	Infrastructure Renewal	49
2.6.4.1	Details of existing infrastructural facilities	49
2.6.4.2	Need of up gradation of existing facilities	51
2.6.4.3	De-silting of water tanks, drains, rivulets, etc.	51
2.6.4.4	Construction of lined drains/connections	51
2.6.4.5	Treatment and management of contaminated surface water	52
2.6.4.6	Rejuvenation/Management Plan for important eco-	52
2.6.4.7	Carrying of effluent from industrial units located in non-industrial locations to CETP facilities by lined drains/pipelines only and prevention of their disposal into city sewage/surface drains	52
2.6.4.8	Installation of gen set.	
2.6.5	Managerial and Financial aspects	52
2.6.5.1	Cost and time estimates	52
2.6.5.2	Identified Private/Public sector potential investors & their contribution/obligation	52
2.6.5.3	Government Budgetary support requirement	61
2.6.5.4	Hierarchical and structured managerial system for efficient implementation	61
2.6.6	Self-monitoring system in industries (ETPs etc.)	61
2.6.7	Data linkages to SPCB/CPCB (of monitoring devices)	61
3	AIR ENVIRONMENT	63
3.1	Present status of Air environment supported with minimum one year	63
3.1.1	Critical locations for air quality monitoring	63
3.1.2	Present levels of pollutants in air (routine parameters, special parameters and air toxics relevant to the area in three categories – known carcinogens, probable carcinogens and other toxics)	63
3.1.3	Predominant sources contributing to various pollutants	65
3.2	Source of Air Pollution viz industrial, domestic (Coal & Biomass burning),	65
3.3	Air Polluting Industries in the area/cluster	65
3.4	Impact of activities of nearby area on the CEPI Area	66
3.5	Quantification of the air pollution load and relative contribution by different	66
3.6	Action Plan for compliance and control of pollution	66

	3.6.1 Existing infrastructure facilities – Ambient air quality monitoring	66
	3.6.2 Pollution control measures installed by the individual sources of	66
	3.6.3 Technological Intervention	67
	3.6.3.1 Inventorisation of prominent industries with technological gaps	67
	3.6.3.2 Identification of low cost and advanced cleaner technology	67
	3.6.3.3 Introduction and switch over to clearer fuel	67
	3.6.4 Need of infrastructure Renovation	67
	3.6.4.1 Development of roads	67
	3.6.5 Impact on CEPI score after installation/commissioning of full -fledged air pollution control system.	68
	3.6.6 Managerial and Financial aspects – Cost and time estimates	69
	3.6.6.1 Cost and time estimates	69
	3.6.6.2 Identified private/Public sector potential investors & their contribution/obligation	73
	3.6.6.3 Government Budgetary support requirement	73
	3.6.6.4 Hierarchical and structured managerial system for efficient	73
	3.6.7 Self-monitoring system in industries (Stacks, APCDs)	73
	3.6.8 Data linkages to SPCB/CPCB (of monitoring devices)	73
4	LAND ENVIRONMENT (Soil and Ground Water)	74
	4.1 Soil Contamination	74
	4.1.1 Present status of land environment supported with minimum one year analytical data	74
	4.1.2 Critical locations for land/soil pollution assessment and ground water monitoring	87
	4.1.3 Present levels of pollutants in land/soil and ground water (routine parameters, special parameters and water toxics relevant to the area in three categories – known carcinogens, probable carcinogens and other toxics)	87
	4.1.4 Predominant sources contributing to or posing danger of pollution of land and ground water such as hazardous/toxic wastes or chemicals dumps/storage etc.	87
	4.1.5 Sources of Soil Contamination	87
	4.1.6 Types of existing pollution	87
	4.1.7 Remedies for abatement, treatment and restoration of normal soil	88
	4.2 Ground water contamination	88
	4.2.1 Present status/quality of ground water	88
	4.2.2 Source Identification (Existing sources of Ground water	88
	4.2.3 Ground water quality monitoring program	88
	4.2.4 Action Plan for control of pollution including cost/time	88
	4.2.5 Treatment and management of contaminated ground water	91
	4.2.6 Impact on CEPI score after abatement of pollution	92
	4.3 Solid Waste Generation and Management	93
	4.3.1 Waste Classification and Quantification	93

		4.3.1.1 Hazardous waste	93
		4.3.1.2 Bio-medical waste	93
		4.3.1.3 Electronic waste	93
		4.3.1.4 Municipal Solid Waste/Domestic Waste/Sludges from ETPs/CETPs/STPs and other industrial	93
		4.3.1.5 Plastic waste	93
		4.3.1.6 Quantification of wastes and relative contribution from different sources	93
	4.3.2	Identification of waste minimization and waste exchange	93
	4.3.3	Reduction /Reuse /Recovery / Recycle options in the co-processing of wastes	93
	4.3.4	Infrastructure facilities	93
		4.3.4.1 Existing TSDF/Incineration facilities including	93
		4.3.4.2 Present status/performance and need of up gradation of existing facilities including enhancement of capacities	98
		4.3.4.3 Treatment and management of contaminated waste disposal sites, etc.	98
		4.3.4.4 Impact on CEPI score after proper management of Solid	98
5	PPP Model		98
	5.1	Identification of project proposals (for both the options i.e. technology intervention and infrastructure renewal) for implementation under the PPP model under the Action Plan.	98
	5.2	Identification of stakeholders / agencies to be involved and to evolve financial and managerial mechanisms for implementation of PPP projects.	99
6	Other infrastructural Renewal measures		99
	6.1	Green Belts	99
	6.2	Development of Industrial Estate(s)	99
	6.3	Development of shifting of industries located in the non-industrial areas to	99
7	Specific Schemes		99
	7.1	GIS-GPS system for pollution sources monitoring	99
	7.2	Hydro-geological fracturing for water bodies rejuvenation	99
	7.3	In-situ remediation of sewage	99
	7.4	Utilization of MSW inert by gas based brick kilns	99
	7.5	Co-processing of wastes in cement industries	99
8	Public awareness and training Programmes		100
9	Overall Impact of Installation/commissioning of pollution control equipment's/measures on the CEPI score		103
10	Assessment of Techno-economic feasibility of pollution control systems in clusters of small/medium scale industries		103
11	Efforts shall be made to encourage use of Bio-compost and Bio-fertilizer along with the chemical fertilizer in the state to minimize the unutilised chemical fertilizer run-off into the natural water resources from agriculture fields (through Govt. Policy)		104
12	Achievements		104
13	Summary of proposed action points		116
	12.1	Short Term Action Points (upto 1 year, including continuous Activities)	116
	12.2	Long Term Action Points (more than 1 year)	124

1. INTRODUCTION:

1.1 Area Details including brief history (background information) :

Maharashtra Industrial Development Corporation (MIDC) has established an industrial estate at Thane Belapur Road, Navi Mumbai in the year 1963 which is known as Trans Thane Creek (TTC) MIDC Estate. The Estate is located along Thane Belapur Road towards Northern side of road and total area of the industrial estate is 27 sq.kms and about 16% of total area in Navi Mumbai falls under MIDC zone.

The TTC industrial area accounts about **3254** industrial units of various category engaged in the manufacture of chemicals, dyes, dye-intermediates, Bulk drugs, pharmaceuticals, Textile auxiliaries, Pesticides, Petrochemicals, Textile processors, Engineering units etc. Some of them are generating trade effluent and total effluent quantity from all these units is 26 MLD. All the major & medium industries have provided full-fledged effluent treatment plant and the small industries have provided primary effluent treatment plants (ETP). The treated effluent of the industries is discharged into Common Effluent Treatment Plant (CETP) for further treatment and disposal. The effluent is further treated in CETP and then discharged into TTC creek through closed pipeline at the point recommended by National Institute of Oceanography (NIO).

All the air polluting industries have provided emission control systems such as Scrubbers, Wet scrubbers, Dust collectors and stacks of sufficient height. Some industries generate hazardous waste from their process and effluent treatment plant. The Hazardous waste is sent to CHWTSDF.

There are two major common infrastructures in TTC MIDC area. One is Common Effluent Treatment Plant (CETP). Capacity of the CETP is 27 MLD and based on extended aerations activated sludge process technology. The treated effluent from the industries is collected through closed pipeline. The CETP comprises of collection / equalization /

neutralization sump, Clariflocculator, Aeration tank, clarifier, sludge drying beds & decanter etc.

Another infrastructure is Common Hazardous Waste Treatment Storage and Disposal Facility (CHWTSDF) provided by TTC Waste Management Association. The Hazardous Waste from the Navi Mumbai area is discharged at the facility by either direct landfill (DFL) or landfill after treatment (LAT) as required. The incinerable waste is sent to another CHWTSDF at Taloja, provided by M/s. Mumbai Waste Management Ltd. MIDC Taloja, Dist. Raigad.

There is a Township newly established by CIDCO on the either side of Thane Belapur Road which is known as Navi Mumbai and is governed by Navi Mumbai Municipal Corporation (NMMC). Navi Mumbai is a planned city, designed to decongest Mumbai, in 1970 City & Industrial Development Corporation (CIDCO) was incorporated with purpose to plan, develop and maintain the city of Navi Mumbai under 'Companies Act' of 1956'. CIDCO has planned to develop 14 nodes in Navi Mumbai out of which 8 nodes were handed over to Navi Mumbai Municipal Corporation (NMMC) in 1991 for its maintenance.

Navi Mumbai is a part of Konkan coast line and is located in centre of MMR (Mumbai Metropolitan Region) with Thane creek on west side while the Parsik hill ranges surrounded on east side, whereas Thane and Panvel region covers the North and South zone. NMMC jurisdiction is divided in eight zones starting with Digha in north and Belapur in south

Population of the Town is above a million. Requirement of water for the Township is 317 MLD which is fulfilled by Morbe, Barvi and Hetwane dam, and generation of sewages is 245 MLD. The NMMC have provided 8 Sewage Treatment Plants (STP) at various places. All of them are fully equipped and working satisfactorily.

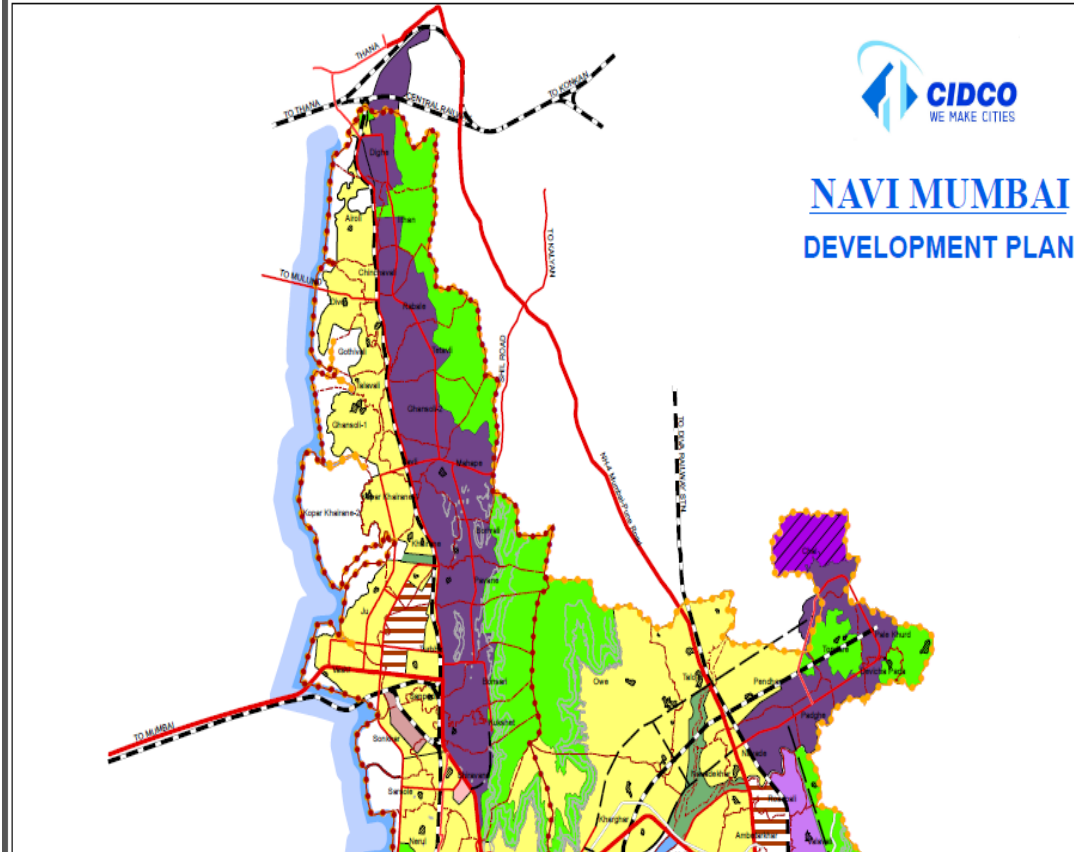
Besides the industries, there are other sources which are major contributors for pollution, especially air pollution. Navi Mumbai is a developing town and so many construction activities are going on. There is lot of emissions by transport and handling of cement and other construction material. There is another organization i.e. Agro Produces Marketing Committee (APMC) where there is huge transaction of agro products. There is lot of emissions due to transport, loading, unloading and handling of agro produces. These activities contribute air pollution.

Another major source for air pollution is the transport. Navi Mumbai is the major pass-way for Mumbai and Thane and lacs of vehicles pass to and fro. The auto exhaust as well as dust emissions from these vehicles contribute lot of air pollution. There are also other sources of stationery emissions such as Rail/Bus transport, Market places etc. The sources other than the industries contribute more.

1.2 Location:

Name of the Industrial cluster	TTC MIDC area, Thane Belapur Road, Navi Mumbai.
Area	Approx. 27 Sq.km.
Surroundings	East: Parsik Hill range. West : Thane Municipal Area North: Parsik Hill South : Thane Belapur Road , and Navi Mumbai Township.

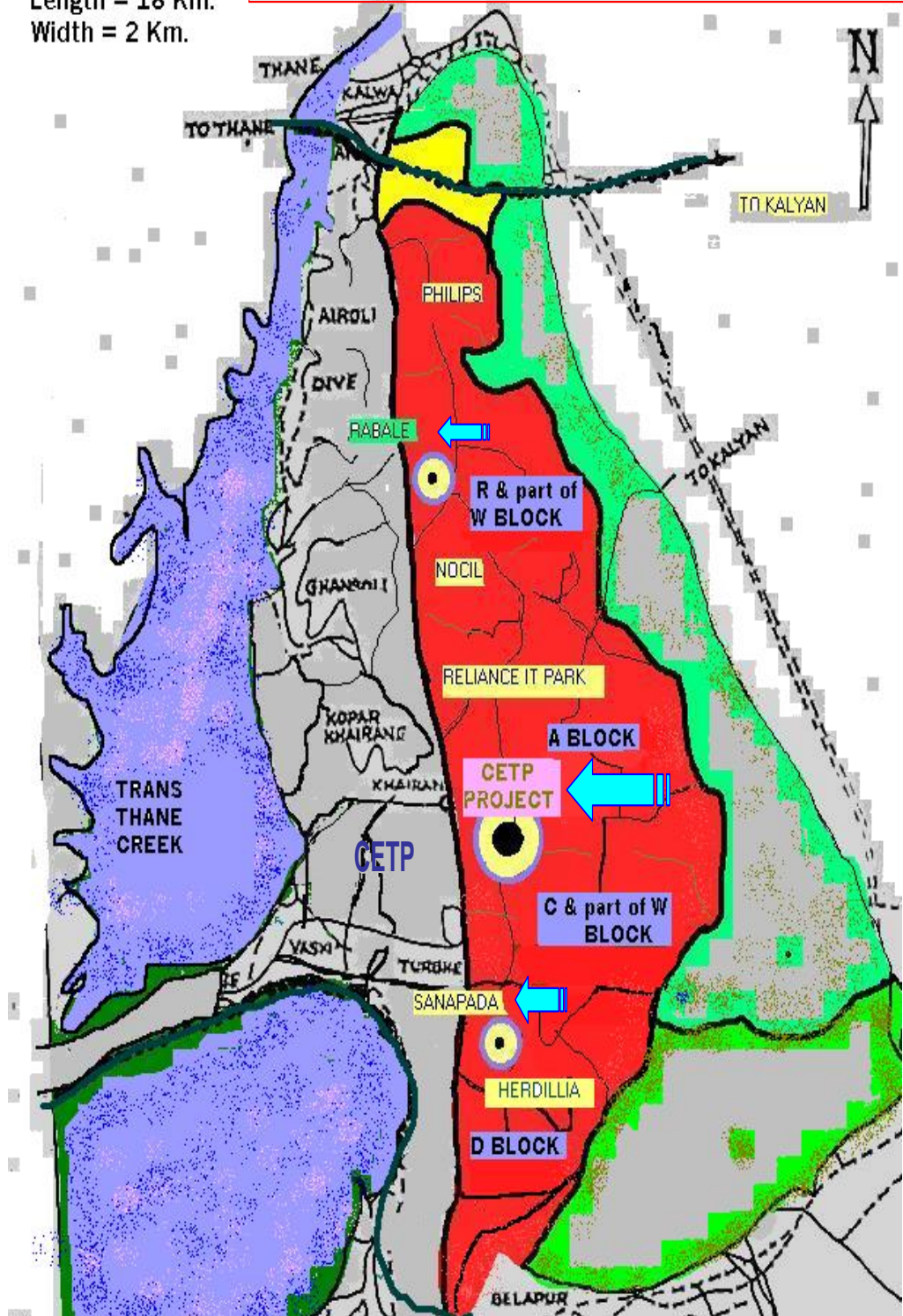
1.3 Digitized Map:



1.3.1 Digitized Map:

TTC INDL. AREA
Length = 18 Km.
Width = 2 Km.

TTC INDUSTRIAL AREA AND CETP LOCATION



1.4 CEPI Score of Navi Mumbai for (Air, Water, Land and Total) :

CPCB has published a report on Comprehensive Environmental Assessment of Industrial Cluster in December 2009. In respect of industrial estates in the Maharashtra Chandrapur, Dombivali, Aurangabad, Navi Mumbai & Tarapur have been designated as critical /severe from environmental pollution angle. Navi Mumbai was one of them having aggregate CEPI Score 73.77. Thereafter on review by CPCB in the year 2013 is having aggregate CEPI Score 72.87 the details are as under;

CEPI Score															
Sr No	PARTICULAR	Year	POLLUTANTS			PATHWAYS				RECEPTOR				AHRE	CEPI SCORE
			A1	A2	A = (A1 x A2)	B1	B2	B3	B = (B1+B2+B3)	C1	C2	C3	C = (C1 x C2) + C3	D	
			1	AIR	2009	6	5	30	6	0	0	6	3	5		0	15	10	61
		2013	6	5	30	2	0	0	2	5	1	0	5	10	47
2	WATER	2009	3	5	15	8	3	3	14	5	3	5	20	10	59
		2013	3	5	15	7.5	3	3	13.5	5	4.5	5	27.5	10	66
3	LAND / SOIL	2009	3	5	15	6	1.5	3	10.5	5	3	5	20	10	55.5
		2013	3	5	15	2	3	3	8	5	1	5	10	10	43

1.5 Information of the cluster and its impact zone:

The population pressure on the city is ever growing. As per the 2001 census, the Population of the residential area around the industrial area of Navi Mumbai is about 7.5 lacs numbers and as per growth rate considered as 10% per annum, the present population is about 12.5 lacs.

Navi Mumbai enjoys a tropical climate with mean annual temperature of 23.3° C (min) to 34.9 °C (max). The hottest and driest part of the year is April-May, when temperature rises to 39° C. The humidity is usually in the range of 58 to 84% and sea breeze in the evening hours is a blessing to combat the high temperature and humidity during summer months. The average southwest monsoon rainfall is in the range of 1850 mm to 2000mm. The Residential area is adjacent to the cluster of TTC

industrial area. The following information /data are available from the source of Navi Mumbai Municipal Corporation.

1.	Population	Above 10 Lakhs as per
2.	Hospitals	Approx. SRO-I : 195 (Bedded) SRO-II : 130 (Bedded) Total : 325
3.	Education Institute	Approx. 200
4.	Courts	One

1.6 Eco-geological features Impact Zone:

1.6.1 The Major Water Bodies (River, Lakes, ponds, etc.): No river in the vicinity of TTC indl area. One pond namely the Mahape lake/pond with area of 1,338 sq. metres.

1.6.2 No Ecological parks, Sanctuaries, flora and fauna or any eco sensitive zones within radius of 2 Km of the cluster.

1.6.3 No Buildings or Monuments of Historical / archaeological / religious importance within radius of 2 Km of the cluster.

1.7 Industry classification: The TTC-MIDC is one of the biggest industrial zones in India. This industrial cluster consists of mainly Chemical, Textile, Bulk-Drugs Manufacturing Units and has IT Parks.

INDUSTRY DATA:

	Type of Industries	Number of Industries		
		SRO-I	SRO-II	Total
1.7.1	Highly Polluting industries (17 categories)	13	3	16
1.7.2	Grossly Polluting industries	0	0	0
1.7.3	Red category industries	393	413	806
1.7.4	Orange category industries	464	332	796
1.7.5	Green category industries	271	241	512
1.7.6	White category industries	152	972	1124
	Total	1293	1961	3254

1.7.1 Highly Polluting industries (17 categories)

Operational List of 17 categories industries:

Sr. No.	Industries Name	Industry Type
1	M/s. Sandoz Pvt. Ltd. Plot No. D-31/32, TTC, MIDC, Turbhe, Navi Mumbai	Basic Drugs & Pharma Mfg.
2	M/s. Hemmo Pharmaceuticals Pvt. Ltd., Plot No. C-43, TTC, MIDC Pawane, Navi Mumbai	Basic Drugs & Pharma Mfg.
3	M/s. Modepro India Pvt. Ltd., Plot No. D-16/2, TTC MIDC, Navi Mumbai	Basic Drugs & Pharma Mfg.
4	M/s. R.P.G Life Science Ltd. Plot No. 25 & 25A, TTC MIDC Pawane, Navi Mumbai	Basic Drugs & Pharma Mfg.
5	M/s. Zydus Takeda Health Care Ltd., Plot No. C-4, TTC MIDC, Thane-Belapur Road, Navi Mumbai-400705.	Basic Drugs & Pharma Mfg.
6	M/s. Zoeitus Plot No. 16, TTC MIDC Indl, Turbhe, Navi Mumbai	Basic Drugs & Pharma Mfg.
7	M/s. S I Group India Ltd. Plot No. 2, TTC, MIDC, Turbhe, Navi Mumbai	Petrochemical
8	Padarsh Pharmaceuticals Pvt Ltd, Plot No. C-45/1, TTC, MIDC Pawane, Navi Mumbai	Basic Drugs & Pharma Mfg.
9	Paramount Chemical Industries, Plot No. C-384, TTC, MIDC Pawane, Navi Mumbai	Basic Drugs & Pharma Mfg.
10	Paras Organics Pvt Ltd, Plot No. D-119, TTC, MIDC Shirvane, Navi Mumbai	Basic Drugs & Pharma Mfg.
11	Great Pacific Exports Pvt. Ltd. Plot No. D-5/8, TTC, MIDC Shirvane, Navi Mumbai	Basic Drugs & Pharma Mfg.
12	NGL Fine Chem Limited, Plot No. W-142, TTC, MIDC Khirane, Navi Mumbai	Basic Drugs & Pharma Mfg.
13	Deepa Chemicals, Plot No. W-20, TTC, MIDC Pawane, Navi Mumbai	Dyes and Dye-intermediates
14	Reliance Life Sciences Pvt. Ltd, Plot No. R-282, MIDC Rabale, Thane-Belapur Road, Navi Mumbai	Basic Drugs & Pharma Mfg.
15	Indoco Remedies Ltd, R-104, MIDC Rabale, Thane-Belapur Road, Navi Mumbai	Basic Drugs & Pharma Mfg.
16	Maharashtra Polybutens Ltd, R-104, MIDC Mahape, Thane-Belapur Road, Navi Mumbai	Petrochemical

Summarized Status of Compliance of 17 category Industries

Sr. No.	Category of Industry	Total	No. of Operational and Complying Units	No. of Operational and Non-complying Units	Non-operation al Units	Closed Units
1	Aluminium Smelter	0	0	0	0	
2	Basic Drugs & Pharmaceuticals Mfg.	17	13	0	0	4
3	Chlor Alkali/Caustic Soda	0	0	0	0	
4	Cement (200 TPD and above)	0	0	0	0	
5	Copper Smelting	0	0	0	0	
6	Dyes & Dye Intermediate	1	1	0	0	
7	Fermentation (Distillery)	0	0	0	0	
8	Fertilizer	0	0	0	0	0
9	Integrated Iron & Steel	0	0	0	0	
10	Leather Processing including Tanneries				0	
11	Oil Refinery	0	0	0	0	
12	Pesticide Formulation & Mfg.	2	0	0	0	2
13	Pulp & Paper (30 TPD and above)	0	0	0	0	
14	Petrochemical	2	1	1	0	
15	Sugar	0	0	0	0	
16	Thermal Power Plants	0	0	0	0	
17	Zinc Smelting	0	0	0	0	
Total		22	15	1	0	6

WATER ENVIRONMENT:

2.1.1 The MIDC has made its own arrangements for supplying water to the Industries from Morbe Dam, located on Dhavri River, tributary of river Patalganga in Karjat Taluka stands at a height of 194 ft. above sea level with surface area of around 9,780 sq km. located at distance of 35 km from TTC industrial cluster. There is no direct or indirect discharge of effluent in the water bodies. The treated effluent of the industries is discharged into Common Effluent Treatment Plant (CETP) for further treatment and disposal. The effluent is further treated in CETP and then discharged into TTC creek through closed pipeline at the point recommended by National Institute of Oceanography (NIO). There are 4 nallas passing through the industrial cluster which further meets to Vashi creek.

2.1.2. Present levels of pollutants in water bodies/effluent receiving drains/ground water (routine parameters, special parameters and water toxics relevant to the area in three categories – known carcinogens, probable carcinogens and other toxics) There are four Nallas viz. Juinagar Nalla, Alok Nalla, Nocil Nalla and Airoli Nalla, and the creek water monitoring points at Airoli Bridge and Vashi Bridge.

Results of Water Quality in Nallas Monitored by MPCB:

Nala	Months	Parameters							
		pH	D.O (mg/l)	B.O.D. (mg/l)	C.O.D. (mg/l)	Nitrate (mg/l)	Nitrite (mg/l)	Sulphate (mg/l)	Chloride (mg/l)
YEAR : 2013									
Airoli	January	8.9	-	20	124	0.1	0	38.7	460.4
	May	7.3	0	140	272	2.1	0.2	58.8	194
	August	7.7	2.3	52	124	3.2	2.1	69.8	48
	December	6.5	0	130	480	0.4	BDL	64	152
	AVG	7.6	0.77	85.5	250	1.45	0.77	57.83	213.6
Nocil	January	8.9	-	32	108	2.3	0	36.8	371.9
	May	7.3	-	130	276	2.4	0.1	59.4	195.9
	August	7	2.2	48	100	3.3	0.1	72.9	49
	December	6.4	0	140	488	0.4	0	366.5	136
	AVG	7.4	1.1	87.5	243	2.1	0.05	133.9	188.2
Alok	March	7		85	212	3.2	0.9	190	138
	June	7.5		70	172	0	0.2	59.3	177.9
	July	7.4		12	36	0.3	0	35	105
	AVG	7.30		55.67	140.00	1.17	0.37	94.77	140.30
Juinagar	March	7.2		50	112	0.3	0	101.4	102
	June	7.5		60	168	0.4	0.1	62	185.9
	July	7.9		8	24	0	0	10.8	32.5
	AVG	7.53		39.33	101.33	0.23	0.03	58.07	106.80
YEAR : 2014									
Airoli	January	6.9	0	110	264	1.6	0.1	58.5	291.9
	May	6.7	0	140	276	0.4	0.1	46.7	140
	August	6.9	4.3	20	64	0.2	0	164.3	61.5
	December	8.6	5.7	6	20	0.2	0	32.8	68
AVG	7.28	2.5	69	156	0.6	0.05	75.58	140.35	
Nocil	April	7.2	0	70	120	4.6	0	19.2	57
	May	-	0	130	268	0.4	0.1	21.9	136
	August	7	2.2	30	108	0.2	0	169.1	61.5

	November	8.6	5.7	6	20	0.2	0	34.1	122
	AVG	7.6	1.98	59	129	1.35	0.03	61.08	94.13
Alok	January	7.8		22	88	1.2	0.5	19.3	96.5
	July	7.6		115	72.8	0.2	0	104.6	56
	Sep	7.4		55	24	0.2	0	70.9	41.5
	AVG	7.60		64.00	61.60	0.53	0.17	64.93	64.67
Juinagar	Jan	7.8		18	76	1.2	0.6	20.6	103
	AVG	7.8		18	76	1.2	0.6	20.6	103
	YEAR : 2015								
Airoli	January	-	-	-	-	-	-	-	-
	May	7.7		5	12	5.9	0.3	39.1	66.5
	August	7.1		76	208	3.2	1.1	98.6	78.5
	October	6.9		115	364	1.9	0.1	109.6	207.9
	AVG	7.23		65.33	194.7	3.67	0.5	82.43	117.63
Nocil	June	7	-	74	168	1.3	0.1	80.3	80
	July	7.2	-	9	68	-	-	72.3	-
	August	7.2	-	80	204	0.7	0.1	219.2	78
	October	7	-	12	384	1.9	0.1	18	219.9
	AVG	7.13	-	33.67	218.7	1.3	0.1	103.2	148.95
Alok	June	6.9		80	81.6	4.1	0	0	0
	Dec	7.5		54	148	3.3	0	0	0
	AVG	7.2		67	114.8	3.7	0	0	0
Juinagar	July	7.1		12	140	0	3.4	0	0
	Sep	7.5		36	96	2.2	0	136.8	202.9
	Dec	7.2		72	276	3	0.2	0	0
	AVG	7.27		40.00	170.67	1.73	1.20	45.60	67.63
	YEAR : 2016								
Airoli	March	6.9	-	120	316	1.7	BDL	99.4	168
	July	6.5	-	120	596	3.7	0.2	33.3	18.5

	November	7.3	-	9	32	7.1	BDL	86	255.9
	AVG	6.9	-	83	#####	4.17	0.2	72.9	147.47
Nocil	March	6.8	-	64	124	1.7	BDL	138.8	51.5
	August	8	-	52	120	1.9	BDL	127.8	94
	AVG	7.4	-	52	120	1.9	BDL	127.8	94
Alok	Apr	7.6		15	268	4.8	0	0	0
	Oct	6.8		70	156	7	0	210	287
	Nov	6.7		20	88	0.7	0	88.2	261
	AVG								
Juinagar	Jan	6.6		110	372	2.1	BDL		
	AVG	6.6		110	372	2.1	BDL		

Water Quality Monitored at : Vashi Creek at Airoli Bridge

Name of the program : NWMP Type of Sample : Surface
Class : N/A Frequency : Monthly (Trend)
Regional Office : Navi Mumbai Regional Lab : ---

WQI	Quality classification	Remarks	Colour code
63-100	Good to Excellent	Non Polluted	Green
50-63	Medium to Good	Non Polluted	Yellow
38-50	Bad	Polluted	Orange
38 and less	Bad to very Bad	Heavily Polluted	Red

Months	Parameters						WQI
	pH	Dissolved Oxygen (mg/l)	B.O.D. (mg/l)	C.O.D. (mg/l)	Nitrate (mg/l)	Fecal Coliform (MPN/100 ml)	
YEAR : 2013							
January	7.1	3.8	14	208	0.3	170	52.67
February	7.2	3.6	16	216	0.3	350	49.48
March	7.8	3.6	14	176	0.3	350	46.78
April	7.2	4.4	4	80	2.6	350	63.34
May	7.4	4	8.1	112	3.9	900	52.06
June	7.5	4.5	8	420	0.4	225	58.81
July	7.5	5.3	6	6	1.4	250	65.6
August	7.4	5.2	8	64	0.2	1600	58.58

Sept.	8.2	4.8	9	72	1.8	425	52.5										
October	7.3	3.9	8	72	2.6	550	54.51										
November	7.7	5.4	7	36	0.5	550	60.96										
December	7.6	6.8	6.8	164	4	350	67.94										
=====																	
TOTAL	MI N	MA X	AV G	MI N	MA X	AVG	MIN	MAX	AVG	MIN	MAX	AVG	MI N	MAX	MIN	MAX	AVG
	7.1	8.2	7.49	3.6	6.8	4.61	4	16	9.08	6	420	135.5	0.2	4	170	1600	505.8
YEAR : 2014																	
January	7.4	4.5	8	116	3.7	900	54.9										
Feb.	7.4	3.4	9	192	2.1	550	49.1										
March	7.4	4.7	6.4	164	1.3	550	59.8										
April	7.6	4.1	18	84	2	250	51.0										
May	7.7	BDL	80	224	2.8	250	28.9										
June	7.9	3	15	20	1.1	300	43.0										
July	7.5	4.8	11.5	124	5.9	280	56.76										
August	7.7	5	12.5	40	0.9	280	56.32										
Sept.	7.2	6.5	5.8	20	0.7	21	81.7										
October	N/A	N/A	N/A	N/A	N/A	N/A	N/A										
Nov.	7.3	5.8	10	96	2.3	94	68.1										
December	8.3	5.8	7	120	2.2	N/A	52.45										
=====																	
TOTAL	MI N	MA X	AVG	MIN	MA X	AVG	MIN	MAX	AVG	MIN	MAX	AVG	MI N	MAX	MIN	MAX	AVG
	7.2	8.3	8.34	3	6.5	4.76	5.8	80	18. 32	20	224	120	0.7	5.9	21	900	347.5

YEAR : 2015																	
January	7.6	4.7	11.5	176	2	900	51.76										
Feb.	7.6	7.2	10	136	4.3	900	59.4										
March	7.6	6	8	160	1.7	900	62.0										
April	7.7	4	11	136	5.4	900	47.3										
May	7.8	3.2	11	196	44.9	900	42.2										
June	7.6	4.7	9.5	136	4	170	58.1										
July	N/A	N/A	N/A	N/A	N/A	N/A	N/A										
August	7.7	5.4	7.2	56	1.5	21	71.26										
Sep.	6.8	5.7	3.8	48	2.4	110	71.6										
October	N/A	N/A	N/A	N/A	N/A	N/A	N/A										
Nov.	7.6	4.6	5	172	2.8	240	62.4										
Dec.	7.3	5.1	7.2	144	2.4	79	68.5										

TOTAL	M I N	MA X	AV G	MIN	MA X	AVG	MIN	MA X	AV G	MIN	MA X	AV G	MIN	MA X	MI N	MA X	AV G
	6.8	7.8	7.53	3.2	7.2	5.06	3.8	11.5	8.4	2	48	196	136	1.5	44.9	21	900	512
YEAR : 2016																	
January	7	4.8	7.8	164	5.9	350	59.05										
February	7.4	4.4	8	160	2.8	79	62.3										
March	7.3	4.5	7.4	188	3	49	66.48										
April	7.4	3.9	18	160	3.2	170	52.48										
May	7.5	3.5	26	148	2.4	170	47.73										
June	7.6	4.5	12	124	1.7	79	58.4										

July	7.5	5	9	68	2	220	60.35
August	7.5	4.8	11	72	2.1	240	57.37
September	8.1	4.8	8	72	5.6	220	56.62
October	7.2	4.9	10	144	4.1	350	58.15
November	7	4.8	10	72	8.3	540	54.72
December	7.2	4.2	14	260	1.4	540	51.9

TOTAL	M	MA	AV	MIN	MA	AVG	MIN	MA	AV	MIN	MA	AV	MIN	MA	MI	MA	AV
	N	X	G		X			X	G		X	G		X	N	X	G
	7	8.1	7.39	3.5	5	4.51	7.4	26	11.	68	260	136	1.4	8.3	49	540	250.

YEAR : 2017

January	7.2	3.6	15	216	1.45	350	49.72
February	6.8	4	14	236	1.4	240	50.46

TOTAL	M	MA	AVG	MIN	MA	AVG	MIN	MA	AV	MIN	MA	AV	MIN	MA	MI	MA	AV
	N	X			X			X	G		X	G		X	N	X	G
	6.								14.								
	8	7.2	7	3.6	4	3.8	14	15	5	216	236	226	1.4	1.45	240	350	295

Water Quality Monitored at : **Vashi Creek at Vashi Bridge**

Name of the program : NWMP

Type of Sample : Surface

Class : N/A

Frequency : Monthly (Trend)

	pH			Dissolved Oxygen			B.O.D.			C.O.D.			Nitrate			Fecal Coliform		WQI
	MIN	MAX	AVG	MIN	MAX	AVG	MIN	MAX	AVG	MIN	MAX	AVG	MIN	MAX	AVG	MIN	MAX	
January	7.4			4.3			7.2			276			1.8			550		56.53
Feb.	7.1			3.8			14			164			1.8			350		50.33
March	7.7			3.8			14			196			0.4			550		47.09
April	7.4			5.1			4.4			8.4			1.3			550		64.71
May	7.3			3.8			14			140			3.7			900		48.75
June	7.4			4.7			5.4			108			0.3			900		59.56
July	7.6			5.7			4.6			56			1.4			550		66.48
August	7.7			5.5			7			72			0.3			1600		59.61
Sept.	7.9			5.1			7.5			76			0.8			550		57.31
Octo.	7.6			4.1			9			88			4.9			170		55.5
Nov.	7.5			4.2			12			160			2.1			550		51.11
Dec.	7.2			3.9			8.4			208			3.3			900		51.65
TOTAL	7.1	7.9	7.48	3.8	5.7	4.5	4.4	14	8.96	8.4	276	129	0.3	4.9	1.84	170	1600	676.7
January	8.3			4.9			5.6			212			3.3			350		57.55
Feb.	7.4			3.3			10			240			1.1			550		47.22
March	7.7			4.1			6.6			220			0.5			900		52.64
April	7.9			2.2			40			156			1.1			550		32.02
May	7.7			BDL			72			156			2.7			250		28.96

June	7.6			5.1			7			104			1.2			220		62.91
July	7.8			5.3			9.5			148			3.2			350		57.88
August	7.6			4.7			14.5			36			3.5			70		59.32
Sept.	N/A			N/A			N/A			N/A			N/A			N/A		N/A
Oct.	7.8			5.3			8			32			0.7			350		59.88
Nov.	7.2			5.8			10			20			2.5			280		63.9
Dec.	N/A			N/A			N/A			N/A			N/A			N/A		N/A
TOTAL	MIN	MAX	AVG	MIN	MAX	AVG	MIN	MAX	AVG	MIN	MAX	AVG	MIN	MAX	AVG	MIN	MAX	AVG
	7.2	8.3	7.7	2.2	5.8	4.07	5.6	72	18.32	20	240	132	0.5	3.5	1.98	70	900	387
January	7.8			4.5			10			168			2.4			900		49.7
Feb.	7.6			4.6			8			104			5.5			900		54.23
March	7.6			5.4			6			120			1.5			900		61.35
April	N/A			N/A			N/A			N/A			N/A			N/A		N/A
May	7.8			6			9			176			9.4			900		59.4
June	7.7			5			12			192			3			140		58.68
July	N/A			N/A			N/A			N/A			N/A			N/A		N/A
August	7.7			5.6			5			60			2.1			110		69.94
Sept.	7.7			4.8			7.4			116			1			94		62.79
Octo.	7.5			5			7.4			88			1			110		64.72
Nov.	6.9			4.5			7.2			228			2			110		61.18
Dec.	7.5			5.6			5.4			72			1.2			66		72.38
TOTAL	MIN	MAX	AVG	MIN	MAX	AVG	MIN	MAX	AVG	MIN	MAX	AVG	MIN	MAX	AVG	MIN	MAX	AVG
	6.9	7.8	7.58	4.5	6	5.1	5	12	7.74	60	228	132	1	9.4	2.91	66	900	423
January	6.9			4.4			8.4			140			4.3			170		57.62
February	7.5			4.3			8.8			200			2.9			170		57.54
March	N/A			N/A			N/A			N/A			N/A			N/A		N/A

April	7.3			5.9			5			24			2.2			110		74.86
May	8			4.5			10			168			1.7			110		55.18
June	7.5			4.7			15			204			1.3			140		57.62
July	7.2			5			9			72			4.5			170		62.38
August	7.1			5.4			7			60			2.5			130		67.4
Sept.	7.6			3.8			16			16			3.2			170		51.08
October	6.9			4.4			12			188			5.3			220		54.17
Nov.	7.6			3.2			17			288			4.1			540		43.76
Dec.	7			4.7			11			136			1.4			540		53.91
TOTAL	MIN	MAX	AVG	MIN	MAX	AVG	MIN	MAX	AVG	MIN	MAX	AVG	MIN	MAX	AVG	MIN	MAX	AVG
	6.9	8	7.33	3.2	5.9	4.57	5	17	10.84	16	288	136	1.3	5.3	3.04	110	540	224.6
January	7.1			4.7			14			180			1.24			920		52.23
February	6.7			4.2			15			144			1.5			240		50.6
TOTAL	MIN	MAX	AVG	MIN	MAX	AVG	MIN	MAX	AVG	MIN	MAX	AVG	MIN	MAX	AVG	MIN	MAX	AVG
	6.7	7.1	6.9	4.2	4.7	4.45	14	15	14.5	144	180	162	1.24	1.5	1.37	240	920	580

ANALYSIS REPORT OF STPs

STP Location	Months	Parameters			
		pH	SS (mg/l)	B.O.D. (mg/l)	Oil & Grease (mg/l)
YEAR : 2013					
Bepalpur Sect 12	March	7.2	14	14	BDL
	June	7.5	8	6	BDL
	August	7.2	10	6	BDL
	December	8.2	10	4	BDL
	AVG	7.525	10.5	7.5	
Nerul , Sect 50	March	7.2	14	6	BDL
	May	7.3	16	8	BDL
	June	6.7	26	46	BDL
	Sep	7.5	12	5	BDL
	AVG	7.18	17.00	16.25	
Nerul Sect 2	March	7	70	42	BDL
	June	6.8	108	200	BDL
	Aug	6.8	24	140	BDL
	AVG	6.87	67.33	127.33	
Sanpadd Sect 20	March	7.4	14	10	BDL
	June	7.4	8	5	BDL
	Sep	7.8	8	6	BDL
	AVG	7.53	10.00	7.00	
Vashi Sect 18	Mar	7.4	12	10	BDL
	Jun	7.3	8	5	BDL
	Sep	7.3	8	7	BDL
	Avg	7.33	9.33	7.33	
Koparkahairane Sect 14	January	7.4	10	6	BDL
	May	7.8	8	40	BDL
	August	7.2	12	10	BDL
	Decembur	6.7	14	8	BDL
	AVG	7.28	11.00	16.00	

Airoli Sect 18	March	7.1	16	5.5	BDL
	June	7.1	86	70	BDL
	July	7.5	28	8	BDL
	AVG	7.23	43.33	27.83	
Ghansoli Sect	March	7.3	20	5	BDL
	June	7.2	26	5	BDL
	July	7.3	12	5	BDL
	AVG	7.27	19.33	5	
YEAR : 2014					
Beplapur Sect 12	March	7.4	10	4	BDL
	June	6.8	8	4.8	BDL
	August	6.1	10	8	BDL
	Nov	7.9	10	8	BDL
	AVG				
Nerul , Sect 50	March	7	18	5	BDL
	May	7	22	40	BDL
	June	7.5	0	8	BDL
	Sep	8.7	14	12	BDL
	AVG	7.55	13.5	16.25	
Nerul Sect 2	March	6.8	16	10	BDL
	Jun	7.2	48	76	BDL
	Nov	7.9	18	6	BDL
	AVG	7.30	27.33	30.67	
Sanpadd Sect 20	March	6.8	44	70	BDL
	June	7.7	8	6.6	BDL
	Nov	8	18	12	BDL
	AVG	7.50	23.33	29.53	
Vashi Sect 18	Mar	7.1	10	12	BDL
	Jun	7.5	8	7	BDL
	Sep	7.5	10	8	BDL
	Nov	7.7	20	6	BDL

	AVG	7.45	12	8.25	
Koparkhairane Sect 14	January	7.6	10	6	BDL
	May	8.1	8	10	BDL
	August	7.9	10	5.4	BDL
	December	10.5	10	8	BDL
	AVG	8.53	9.50	7.35	
Airoli Sect 18	March	7.5	10	5	BDL
	June	7.6	8	4.8	BDL
	July	7.5	10	6.6	BDL
	AVG	7.53	9.33	5.47	
Ghansoli Sect	March	7.6	10	5	BDL
	June	7.3	10	8	BDL
	July	7.8	8	6.6	BDL
	AVG	7.57	9.33	6.53	
YEAR : 2015					
Bepalpur Sect 12	January	6.9	66	20	BDL
	July	7.5	10	8	BDL
	August	8.2	8	10	BDL
	December	7	12	8	BDL
	AVG				
Nerul , Sect 50	January	9.1	12	120	BDL
	July	7.3	8	8	BDL
	August	7.3	8	5	BDL
	Nov	7	10	5	BDL
	AVG	7.675	9.5	34.5	
Sanpadd Sect 20	Jan	7.4	10	15	BDL
	July	7.2	8	5	BDL
	Oct	7.6	8	8	BDL
	AVG	7.40	8.67	9.33	

Vashi Sect 18	January	7.9	8	4.2	BDL
	Jul	7.3	10	8	BDL
	December	7.1	10	5	BDL
	AVG	7.43	9.33	5.73	
Koparkahairane Sect 14	January	7	14	5.6	BDL
	May	7.9	14	6	BDL
	August	7.3	12	5	BDL
	December	-	-	-	BDL
	AVG	7.4	13.33	5.53	
Airoli Sect 18	March	7.4	12	3	BDL
	June	7.6	8	5	BDL
	July	7.7	8	3	BDL
	AVG	7.57	9.33	3.67	BDL
Ghansoli Sect	March	7.6	10	3	BDL
	June	7.5	10	7	BDL
	July	7.1	10	8	BDL
	AVG	7.4	10	6	
YEAR : 2016					
Bepalpur Sect 12	Oct	6.6	10	10	BDL
	December				BDL
	AVG	6.6	10	10	BDL
					-
Nerul , Sect 50	Oct	6.8	32	6	BDL
	December	..	..	..	..
	AVG	6.8	32	6	BDL
					-
Nerul Sect 2	Oct	6.8	126	45	BDL
	December				BDL
	AVG	6.8	126	45	
					BDL
Sanpadd Sect 20	Oct	6.4	10	7	BDL
	December				-
	AVG	6.4	10	7	BDL

Vashi Sect 18	Oct	6.7	10	8	BDL
	December				BDL
	AVG	6.7	10	8	
Koparkahairane Sect 14	January	7.2	8	6	BDL
	March	7.3	12	5	BDL
	July	7.3	20	13	BDL
	December	-	-	-	-
	AVG	7.27	13.33	8.00	
Airoli Sect 18	March	7.3	22	10	BDL
	June	-	-	-	-
	July	6.8	10	13	BDL
	AVG	7.05	16	11.5	
Ghansoli Sect	March	7.3	10	12	BDL
	May	7.2	20	26	BDL
	July	7.2	-	14	-
	AVG	7.23	15	17.33	

2.1.3. Predominant sources contributing to various pollutants:

There are 458 Industries which are generating trade effluent and have provided ETPs for treating the same and the treated effluent is sent to CETP for further treatment and disposal. Following is the list of 31 Major Polluting Industry whose pollution load in Kg/day is displayed below:

Pollution Load of Major Polluting Industry						2017 status
Sr. No	Name of Industry	Type & Category	Water Pollution Load in Kg/Day			
			BOD	COD	SS	
1	M/s.Alok Industries Ltd.	Red/LSI	21.00	61.69	33.46	Closed
2	M/s. Arkema Chemical India Pvt.ltd (Formerly known as Cray Valley Resins India Ltd.	Red/LSI	0.24	1.56	0.27	Operational

3	M/s.BASF	Red/LSI	7.29	34.19	9.66	Operational
4	M/s.Rallies	Red/LSI	3.58	19.52	5.00	Closed
5	M/s.Savita Oil	Red/LSI	0.16	1.23	0.63	Operational
6	M/s.RPG Life Sciences	Red/LSI	17.29	30.00	4.67	Operational
7	M/s.Zydus	Red/LSI	3.80	14.74	7.66	Operational
8	M/s.Lubrizol	Red/LSI	6.77	28.65	15.52	Operational
9	M/s.Sandoz Ltd.	Red/LSI	11.00	48.90	13.15	Operational
10	M/s.NOCIL LTD.	Red/LSI	51.70	224.40	78.65	Operational
11	M/s.SI GROUP	Red/LSI	26.38	152.47	70.79	Operational
12	M/s.PFIZER LTD	Red/LSI	2.15	10.32	8.77	Closed
13	M/s.HINDUSTAN PLATINUM	Red/LSI	3.98	17.82	2.96	Operational
14	M/s.ELDER PHARMA	Red/LSI	1.13	3.89	0.87	Closed
15	M/s.AMINES & PLASTICIZERS	Red/MSI	1.16	5.60	1.81	Operational
16	M/s.ASIAN PAINTS	Red/LSI	0.48	2.56	1.44	Operational
17	M/s.SUDITI TEXTILE	Red/LSI	16.34	41.75	17.38	Operational
18	M/s.DARSHAN HOIESARY	Red/MSI	1.64	7.36	6.56	Closed
19	M/s.AKASAKA ELECTRONICS	Red/LSI	0.69	5.49	3.72	Closed
20	M/s.MAZADA COLOURS LTD.	Red/MSI	11.88	123.39	33.34	Operational
21	M/s.EXPANDED POLYMER	Red/MSI	0.19	1.07	0.32	Operational
22	M/s.SHIVSHANKAR TEXTILES	Red/SSI	48.00	158.08	17.92	Operational
23	M/s.Glenmark Pharmaceutical Ltd.	Org/LSI	0.03	0.08	0.04	Operational
24	M/s.Cabot (I) Ltd.	Red/LSI	0.50	2.48	1.12	Closed
25	M/s.CRODA Chemicals	Red/LSI	1.32	3.50	1.55	
26	M/s.Unique Chemicals	Red/MSI	4.50	15.94	1.47	Closed
27	M/s.Henkel Chemicals Pvt.Ltd.	Red/MSI	0.33	1.34	0.62	Operational
28	M/s.Maharashtra Polybutene	Red/LSI	0.57	2.85	1.29	Operational
29	M/s.Sandoz Ltd.	Org/LSI	2.83	9.56	3.42	Operational
30	M/s.Akash Fabric	Red/SSI	7.17	177.60	9.72	Operational

31	M/s.Sovotex	Red/SSI	18.38	58.75	10.85	Operational

2.2 Sources of Water Pollution:

2.2.1. Industrial effluent: Out of 458 effluent generating industries, major units are textile, chemical and bulk drugs, pharmaceuticals, dyes, pesticides, etc. The partly treated effluent of the SSI units and fully treated Effluent of MSI/ LSI units is carried through MIDC pipe line to CETP, along with the domestic effluent (sewage) of some Industries and some of the residential areas which are in the MIDC zone.

2.2.2. Domestic Effluent (Sewage):

The total domestic effluent generated from the residential area of Navi Mumbai Municipal Corporation is about 245 MLD. The NMMC have provided 8 Sewage Treatment Plants (STP) at various places. Three of them are fully equipped and working satisfactorily. The 8th STP upgradation is under progress.

2.2.3. Others:

The Navi Mumbai city is spread at the bottom of the hill. Total area is urbanized and there is no agriculture land and so no agriculture runoff.

The population of Navi Mumbai is above 10 lacs and about 550 T/D of MSW is generated. NMMC has developed MSW dumping site at Turbhe and the site in operation since 2005. Area of site is 65 Acre which may be sufficient for next 50 years. At present secured landfill is going on and quantity of MSW accumulated at site is about 12 lacs Tones. There are three cells, out of which two cells are already completed and third cell is in operation. The completed cells are scientifically closed. NMMC has provided Waste to Compost and RDF (Refuse Derived Fuel). Provided leachate treatment plant and in operation satisfactory. NMMC has been awarded with 'Vasundara Award 2010' for their appreciable work towards Environmental points.

There is no illegal dumping site in the jurisdiction.

2.2.4. Impact on surrounding area (outside the CEPI area) on the water course/ drainage system of the area under consideration:

Most of the area of TTC MIDC is covered with MIDC drainage system which carries effluent of the industries to CETP for further treatment and disposal. Little part of TTC MIDC Area particularly at Digha, Airoli, and part of Mahape is not connected with the MIDC drainage system due to topography. The major units are using their treated effluent for gardening in non-monsoon season and discharging treated effluent to CETP by tankers in monsoon and quantity of effluent is about 40 m³/day. Small units are discharging their treated effluent into the nearby nalla and hence colored water is seen in the nallas sometime. All the units are member of CETP. Necessary follow up will be taken with MIDC for providing drainage system for the uncovered area.

2.3. Details of Water Polluting Industries in the area/cluster.

Category- wise list of industries are shown as below.

	Type of Industries	Number of Industries		
		SRO-I	SRO-II	Total
1.7.1	Highly Polluting industries (17 categories)	13	3	16
1.7.2	Grossly Polluting industries	0	0	0
1.7.3	Red category industries	393	413	806
1.7.4	Orange category industries	464	332	796
1.7.5	Green category industries	271	241	512
1.7.6	White category industries	152	972	1124
	Total	1293	1961	3254

2.4. Effluent Disposal Methods:

Treated effluent from all the industries is received at CETP through conduit pipe line. This effluent is further treated at CETP. As per the guidelines of NIO, treated effluent is discharged into TTC Creek through closed pipeline. For this purpose MIDC has provided close pipe line upto disposal point. Total length of pipe line is 7.1 km with diameter of 900 mm. About 4 km part of the pipe is on land, another portion of 2 km is tidal zone and remaining 1.1 km is in the submerge zone. Effluent is discharged through gravity and quantity of effluent is 26 MLD.

2.5 Quantification of wastewater pollution load and relative contribution by different sources viz. industrial /domestic:

Total industrial effluent is collected at CETP for further treatment and disposal and the treated effluent of CETP is discharged into TTC creek. The quality of the effluent as well as the quantification of waste pollution load is given below:

AVERAGE ANALYSIS REPORT OF TREATED EFFLUENT OF CETP

Parameters	pH	BOD	COD	SS	O & G.
Standards	5.5 to 9.0	Less than 100 mg/l	Less than 250 mg/l	Less than 100 mg/l	Less than 10 mg/l
2004	7	48	151	58	0
2005	7	67	167	67	2
2006	7	57	148	50	0.5
2007	6.5	54	144	30	1.5
2008	6.5	43	130	38	0.5
2009	6.5	30	30	32	1
2010	7.7	46.8	150	24.7	2
2011	7.7	57.2	162.4	45.09	1.4
2012	7.5	53.1	141.4	30.6	BDL
2013	7.6	40.7	125.7	29.4	1.6
2014	7.4	63.7	199.2	32.1	BDL
2015	6.8	104.8	346.7	60.7	BDL
2016	6.9	101	328.5	60.5	7
2017(April 2nd WEEK)	6.6	135.3	422	80.5	1.4

2.6 Action plan for compliance and control of pollution:

2.6.1 Details of existing infrastructural facilities of CETP:

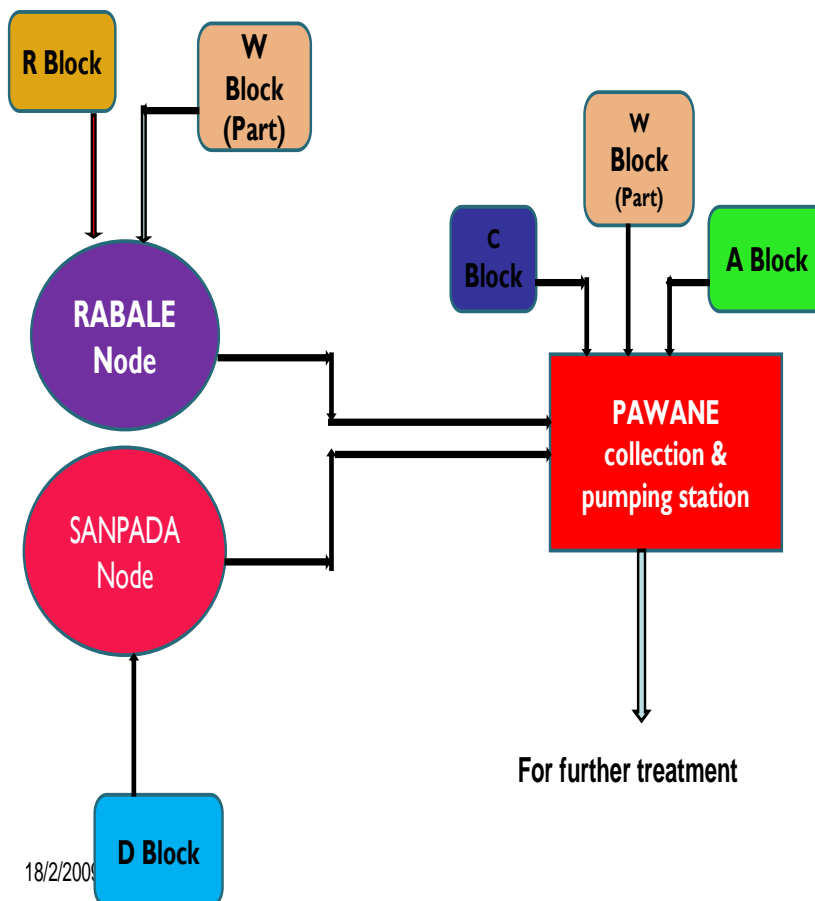
Intensive efforts were made by Thane Belapur Industrial Association (TBIA) to set up a CETP in MIDC, TTC industrial area. The plant of 12 MLD capacity (Phase-I) is in successful operation since 1997. In order to tackle extra load generated by the industries in TTC industrial area, an additional common effluent treatment plant of 15 MLD capacity (Phase-II) was envisaged and is commissioned in 2006.

CETP scheme was implemented mainly to tackle the problem of liquid effluent generated especially from small scale industrial units (SSI) who are having techno-economic constraints. The facility was also made available to all medium and large scale industrial units with the aim to strengthen the financial feasibility, to get advantage of mixing of treated effluents and utilize the common single disposal system.

TECHNOLOGY – PROCESS DETAILS :

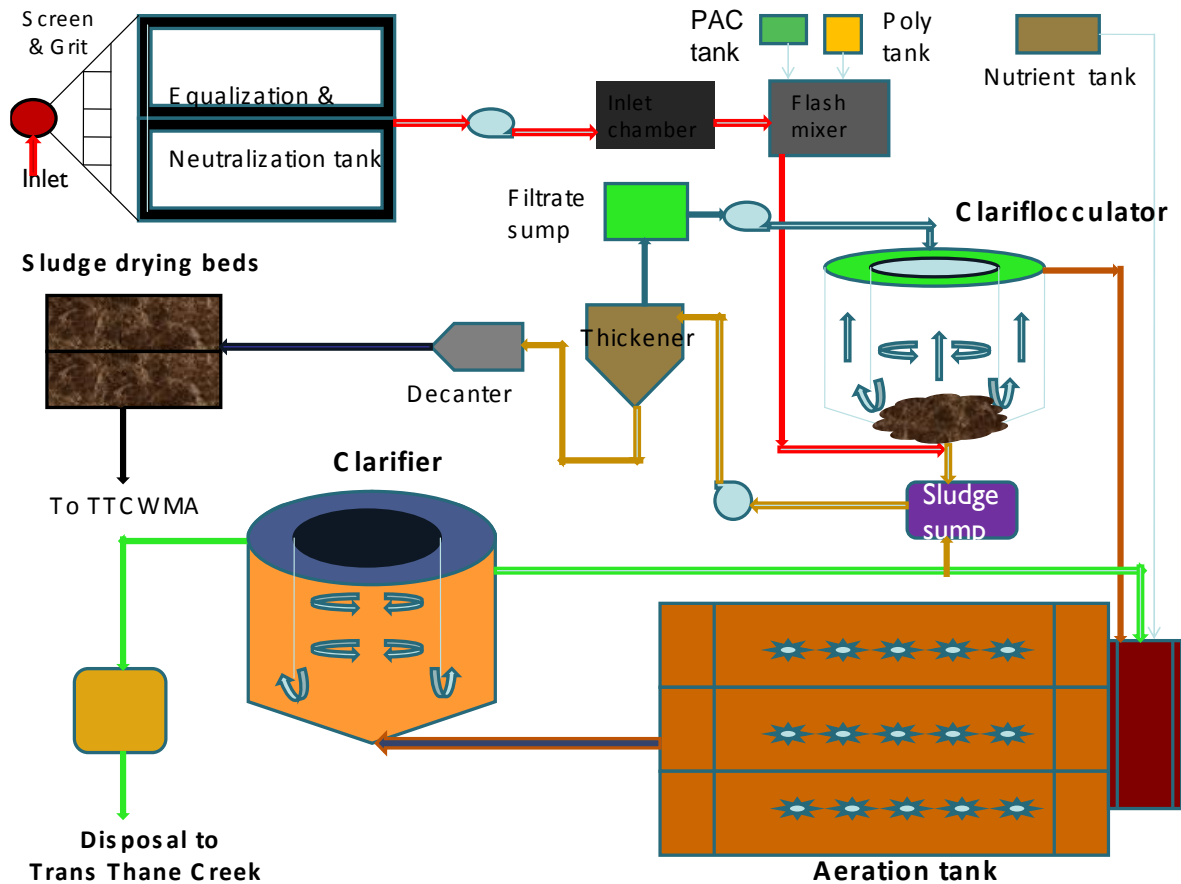
TOTAL CAPACITY : 27 MLD (12MLD + 15 MLD)		
CAPACITY	12 MLD	15 MLD
PROJECT START- UP	1994	2002
PROJECT COMMISSIONED	MARCH – 1997	MARCH – 2006
PROJECT COST	4.0 Crs.	8.5 Crs.

Effluent Transfer Network System



I) Treatment Scheme of CETP:

CETP comprises of various units of treatment scheme such as Equalization tank, Inlet chamber, Flash Mixer, Clariflocculator, Aeration tank, Clarifier, Sludge sump, Thickener, Filtrate sump, sludge drying beds, Centrifuge Decanter, having total treatment capacity of 27 MLD.



INSTALLATION OF PILOT TERTIARY TREATMENT FACILITY / REVERSE OSMOSIS (RO PLANT)



CETP (Thane-Belapur) Association is involved in treatment of industrial effluents generated from TTC industrial area and 27 MLD CETP is in successful operation since almost 15 years. As water-based problems are becoming increasingly common and rated amongst immediate and serious environmental threats facing humans, CETP Thane-Belapur Association decided to take a proactive measure to install a tertiary treatment plant to evaluate a option of reuse & recycle of treated effluents. A proven Reverse Osmosis (RO) technology is selected and is installed as a tertiary treatment option. Based on the feasibility / viability, future expansion will be carried out

II) STPs – Domestic Effluent (Sewage): - The total domestic effluent generated from the **residential** area of Navi Mumbai Municipal Corporation is about **245 MLD**. NMMC has provided 7 STP's at various places for treatment of domestic effluent.

Information	Status	Remarks
Population of the city	above 10.0 lacs.	-
Water consumption	317 MLD	-
Qty of waste water generation	245 MLD	.
Collection	Sewage is collected through underground sewerage system.	
Treatment	7 STPs are provided at various locations i.e. Vashi, Airoli, Sanpada, Nerul Sec-50, Nerul Sec-2, CBD-Belapur and Koparkhairane.	4 STPs having SBR Method & performance is satisfactory. Up-gradation of 3 STPs is in progress.
Disposal	Thane Creek.	-

Detailed information about STPs in Navi Mumbai

Sr. No.	Location	Capacity MLD	Type of Effluent.	Performance	
				2010	Present in 2017
1.	STP sector-50, Nerul, Navi Mumbai	100	Domestic	C-Tech SBR in (Aerated Lagoons) operation.	C-Tech SBR, Satisfactory operational

2.	STP sector-18 Vashi, Navi Mumbai	100	Domestic	C-Tech SBR in (Aerated Lagoons) operation.	C-Tech SBR, Satisfactory operational
3.	STP sector-18 Airoli, Navi Mumbai	80	Domestic	C-Tech SBR in (Aerated Lagoons) operation.	C-Tech SBR, Satisfactory operational
4.	STP sector-12, CBD Belapur, Navi Mumbai	21	Domestic	Being upgraded to C-Tech SBR Technology. Time schedule fixed up to June-2011	C-Tech SBR, Satisfactory operational
5.	STP sector-20 Sanpada, Navi Mumbai	37.50	Domestic	Being upgraded to C-Tech SBR Technology. Time schedule fixed up to June-2011	C-Tech SBR, Satisfactory operational
6.	STP sector-14 Koparkhairane, Navi Mumbai	87.50	Domestic	Being upgraded to C-Tech SBR Technology. Time schedule fixed up to June-2011	C-Tech SBR, Satisfactory operational
7.	STP sector-2, Nerul, Navi Mumbai	17	Domestic	In operation at present. NMMC decided to stop the STP and sewage to be connected to either STP Sanpada or STP sector-50 Nerul. Project under investigation.	Work under progress
8.	Ghansoli Navi Mumbai	30			C-Tech SBR , Satisfactory operational

C-Tech is a cyclic activation sludge treatment process. It provides highest treatment efficiency possible in a single treatment. This method is operated in a batch reactor mode. This eliminates all the inefficiencies of continuous process. The complete biological operation is divided into three cycles. A basic cycle comprises of

1. Filling- The raw waste water is filled in the C-Tech basin up to operating level. Aeration is done at a time for a pre-determined time to aerate the effluent along the bio-mass
2. Aeration- after the Aeration cycle, Bio-mass settles under perfect settling conditions.
3. Settling & Decanting- Once settled the supernants is removed from the top using decanting. Solids area wasted from tank during decanting face.

Photographs of existing STP's



2.6.2 Pollution control measure installed by industries:

All major polluting industries (458 industries) having their own Primary or full fledged ETP in their premises for treatment of effluent generated during

activities. And then effluent is sent to CETP for further treatment and disposal in the Creek.

2.6.3. Technological Intervention:

2.6.3.1. Inventorization of prominent industries with technological gaps.

Ongoing activity for of assessment studies inventory of the major industries to assess further improvements.

2.6.3.2 Identification of low cost and advanced cleaner technology for pollution control: Following industries have adopted Cleaner technology for minimization of waste and other major units are being proposed to adopt Cleaner technology.

Sr.No	Name & Address of Factory	Particular project/treatment plant of Air/Water/clean Technology	Results after Cleaner technology	Present status in 2017
1	M/s. BASF India Ltd. Plot No. 12, TTC Industrial Area, MIDC Turbhe, Navi Mumbai.	Fuel switch over from Furnace oil to bio-briquette.	2300 T/Annum CO2 emission reduced. 235.77 KL furnace oil saved. SO2 Emission reduced 20kg/day. Planned to run Briquettes fired boiler for 90% of duration.	Industry is using clean fuel PNG in their Boiler.
		Replacement of the use of methyl bromide (ODS) with a greener chemical Di-methyl Sulfide.	Bromine gas emissions reduced.	Agro Chemical division of M/s. BASF has been closed since 2007, hence use of methyl bromide (ODS) is stopped.
2	M/s. Pfizer Ltd, TTC Industrial Area, MIDC Turbhe, Navi Mumbai.	Fuel switch over from furnace oil to Briquettes for 12 TPH Boiler	Reduce So2 emission & recovered extra heat from exhaust gas by introducing economizer. Obtained carbon credit of 12200 MT.	Industry is closed since 31/08/2014

3	M/s. NOCIL Ltd, Plot No. C-37, TTC Industrial Area, MIDC Pawne, Navi Mumbai.	The source effluent stream from the Accelerator plant is segregated and treated to recover the intermediate product. The product is then recycled back in to the process	Beside recovery of valuable product, there is COD reduction of the source stream by 50%.	COD reduction of the source stream by 50% is achieved.
		In the Antioxidant process, the acid catalyst being used was getting lost through the aqueous stream. By carrying out process modifications and incorporating necessary charges in the equipments	The catalyst is now extracted and recycled back into the process.	Catalyst is now extracted and recycled back into the process.
		Distillation residue from the Accelerator Plant is disposed off through Incineration at site. An additional stripping unit was installed to recover the intermediate by-product (Which was earlier part of the residue) and same is recycled back into the process.	Besides the recovery of valuable by-product, it has resulted in reduction of solid waste by approx. 50 MT/Annum.	Distillation residue is sent to CHWTSDF for disposal. In-house incinerator at is not in operation.
4	M/s. Cabot India Ltd., Plot No. 3, TTC, MIDC, Ghansoli, Navi Mumbai	Utilization of heat content of tail gas for captive power generation (4 MW)	Previously tail gas (mixture of co-40-45% & other gases O ₂ , CO ₂ , N ₂ etc) was flared. Tail gas temp. is approximately 220°C. Now by investing approx. 40 to 50 Crores 4 MW captive	Industry is closed.

			power plant installed & commissioned.	
5	M/s. Coromandel Fertilizers Ltd. Plot -22/1, TTC, Mahape, P.O Navi Mumbai	Solvent Replacement. (Replacement of CCT by Toulene)	Previously CTC (Carbon tetra Cholide) Solvent was used which is Ozone depleting substance. CTC solvent requirement was approx. 450Kg per ton of endosulphan. Phase wise CTC was replaced with new solvent toluene. At present use of toluene is 100kg per ton of endousulphan.	Industry is closed

Status of Cleaner technology for pollution control adopted by major industries:

Industries being Proposed to Upgrade/Improve existing Pollution Control System.				
Sr. No.	Name of Industry	Effluent quantity	Upgradation/Improvements proposed.	Present Status in 2017
1	M/s.NOCIL LTD. Plot No.C-37, TTC-MIDC, Pawane, Navi Mumbai.	2200	To reduce the effluent load at least by 300 m ³ by recycle, reuse, gardening, etc.	Reduction in effluent load by 300 m ³ by recycle, reuse, gardening, etc is achieved.
2	M/s.Zydus Altana Health Care Pvt.Ltd. Plot No.C-4, TTC-MIDC, Pawane, Navi Mumbai.	200	To reduce the effluent load at least by 20 m ³ by recycle, reuse, gardening, etc.. To improve emission Control System by increasing efficiency of scrubber.	Industry has reduced the effluent load by 20 m ³ by recycle, reuse, gardening, etc.. Industry has provided Reverse Osmosis plant at their ETP. Industry has provided scrubber system to process vents.
3	M/s.RPG Life Sciences Ltd. Plot No.C-25 & 25A, TTC-MIDC, Pawane, Navi Mumbai.	120	To reduce the effluent load at least by 15 m ³ by recycle, reuse, gardening, etc. To use NaOH to reduce quantity of ETP sludge & to provide tertiary treatment. To improve emission Control System by increasing efficiency of scrubber.	Industry has provided primary , secondary & tertiary ETP plant. Industry has provided scrubber system to process vents. Provided VOC analyzer system.
4	M/s.SI GROUP Plot No.D-1/2, TTC-MIDC, Turbhe, Navi Mumbai.	1021	To reduce the effluent load at least by 110 m ³ by recycle, reuse, gardening, etc. To provide tertiary treatment & to reduce Hazardous quantity by adopting	Industry has provided primary , secondary & tertiary ETP plant. Reduction in effluent load & ETP sludge reduction is achieved.

			cleaner technology.	
5	M/s.MAZADA COLOURS LTD. Plot No. D-51, TTC- MIDC, Turbhe, Navi Mumbai.	958	To reduce the effluent load at least by 100 m ³ by recycle, reuse, gardening, etc. To provide tertiary treatment & to reduce Hazardous quantity by adopting cleaner technology.	Industry has provided primary , secondary & tertiary ETP plant & Reduction in effluent load & ETP sludge reduction is achieved.
6	M/s.AMINES & PLASTICIZERS Plot No.D-21/21A, TTC-MIDC, Turbhe, Navi Mumbai.	80	To reduce the effluent load at least by 10 m ³ by recycle, reuse, gardening, etc. To reduce quantity of HW quantity by adopting cleaner technology.	Industry has provided primary, secondary & tertiary ETP plant & Reduction in effluent load & ETP sludge reduction is achieved.
7	M/s.Rallies India Ltd. (Agro Chemical Div.) Plot No.C-15 &16, TTC-MIDC, Pawane, Navi Mumbai.	140	To reduce the effluent load at least by 15 m ³ by recycle, reuse, gardening, etc. To increase the capacity of scrubber to reduce smell.	Industry is Closed.
8	M/s.SHIVSHANKAR TEXTILES Plot No.C- 482, TTC-MIDC, Pawane, Navi Mumbai.	320	To reduce the effluent load at least by 35 m ³ by recycle, reuse, gardening, etc. To use Eco-friendly fuel and to increase efficiency of wet scrubber.	Industry has provided primary & Secondary ETP plant. Provided Wet Scrubber to Coal fired boiler Stack.
9	M/s.HINDUSTAN PLATINUM LTD. Plot No.C-154, TTC- MIDC, Pawane, Navi Mumbai.	125	To reduce the effluent load at least by 15 m ³ by recycle, reuse, gardening, etc. To increase capacity of clarifier for better sedimentation.	Industry has provided primary , secondary & tertiary ETP plant & Reduction in effluent load reduction is achieved.

10	M/s.Lubrizol (I) Ltd. Plot No.9/3, TTC- MIDC, Turbhe, Navi Mumbai.	635	To reduce the effluent load at least by 65 m ³ by recycle, reuse, gardening, etc. To replace lime by NaOH for neutralization in order to reduce quantity of ETP sludge.	Industry has provided primary , secondary & tertiary ETP plant & Reduction in effluent load reduction is achieved.
11	M/s.Cray Valley Resins India Ltd. Plot No.D-43/1, TTC- MIDC, Shiravane, Navi Mumbai.	8	To reduce the effluent load at least by 1 m ³ by recycle, reuse, gardening, etc.	Industry has provided primary , secondary & tertiary ETP plant & Reduction in effluent load reduction is achieved.
12	M/s.AKASAKA ELECTRONICS LIMITED. Plot No.C-107, TTC- MIDC, Pawane, Navi Mumbai.	42	To upgrade existing ETP and to use NaOH in order to reduce quantity of ETP sludge. To reduce the effluent load at least by 5 m ³ by recycle, reuse, gardening, etc.	Industry is closed
13	M/s.ELDER PHARMACEUTICALS LTD. Plot No. D-220, TTC- MIDC, Shiravane, Navi Mumbai.	30	To use NaOH instead of lime in order to reduce quantity of ETP sludge. To reduce the effluent load at least by 5 m ³ by recycle, reuse, gardening, etc.	Industry is closed
14	M/s.EXPANDED POLYMER Plot No.C-45/3, TTC- MIDC, Pawane, Navi Mumbai.	20	To replace old tertiary units by new units of higher capacity. To reduce the effluent load at least by 3 m ³ by recycle,	Industry has installed primary followed by tertiary treatment of ETP . to reduce effluent load at by 5 CMD.

			reuse, gardening, etc.	
15	M/s.SUDITI Industries Ltd. Plot No.253/254, TTC-MIDC, Pawane, Navi Mumbai.	250	To increase capacity settling tank & use eco-friendly fuel. To reduce the effluent load at least by 30 m ³ by recycle, reuse, gardening, etc.	Industry has provided primary , secondary ETP plant & Reduction in effluent load reduction is achieved.
16	M/s.PFIZER LTD. Plot No.16, TTC-MIDC, Turbhe, Navi Mumbai.	430	To reduce the effluent load at least by 45 m ³ by recycle, reuse, gardening, etc.	Industry is closed
17	M/s.Alok Industries Ltd. Plot No.C-16/2, TTC-MIDC, Pawane, Navi Mumbai.	1305	To upgrade ETP and to increase capacity of wet scrubber. To use eco-friendly fuel. To reduce the effluent load at least by 130 m ³ by recycle, reuse, gardening, etc.	Industry is closed
18	M/s.DARSHAN HOSIERY INDUSTRIES LTD. Plot No.A-745, TTC-MIDC, Mahape, Navi Mumbai.	240	To increase capacity of wet scrubber. To reduce the effluent load at least by 25 m ³ by recycle, reuse, gardening, etc.	Industry is closed
19	M/s.Sandoz Pvt.Ltd. Plot No.D-31/32, TTC-MIDC, Turbhe, Navi Mumbai.	430	To reduce the effluent load at least by 45 m ³ by recycle, reuse, gardening, etc.	Industry has provided primary , secondary & tertiary ETP plant & Reduction in effluent load reduction is achieved.
20	M/s.Savita Oil Technologies Ltd. Plot No.C-17/17A, TTC-MIDC, Pawane,	25	To increase capacity of Oil trap & to reduce Hazardous waste quantity by	Industry has provided primary , secondary ETP plant Reduction in effluent load reduction is achieved.

	Navi Mumbai.		adopting cleaner technology. To reduce the effluent load at least by 3 m ³ by recycle, reuse, gardening, etc.	
21	Hemmo Pharma Plot No.C-43, TTC-MIDC, Pawane, Navi Mumbai	50	To reduce the effluent load at least by 5 m ³ by recycle, reuse, gardening, etc.	Industry has provided primary , secondary & tertiary ETP plant & Reduction in effluent load reduction is achieved.
22	M/s.BASF India Ltd. Plot No.12, TTC-MIDC, Turbhe, Navi Mumbai.	444	To use NaOH instead of lime in order to reduce quantity of ETP sludge. To reduce the effluent load at least by 45 m ³ by recycle, reuse, gardening, etc.	Industry has provided primary , secondary & tertiary ETP plant & Reduction in effluent load reduction is achieved.
23	M/s.Glenmark Pharmaceutical Ltd. Plot No.A-607, TTC-MIDC, Mahape, Navi Mumbai.	7	To provide tertiary treatment units. To reduce the effluent load at least by 0.5 m ³ by recycle, reuse, gardening, etc.	Industry has provided tertiary ETP plant & Reduction in effluent load reduction is achieved.
24	M/s.Maharashtra Polybutene Plot No.R-802, TTC-MIDC, Mahape, Navi Mumbai.	78	To reduce the effluent load at least by 10 m ³ by recycle, reuse, gardening, etc.	Industry is intermittently in operation, industry not in operation since last one year.
25	Alfa Laval Plot No.R-674, MIDC, Rabale, Mahape, Navi Mumbai.	20	To provide tertiary treatment units. To reduce the effluent load at least by 2 m ³ by recycle, reuse, gardening, etc.	Industry has provided tertiary ETP plant & Reduction in effluent load reduction is achieved.
26	M/s.Unique Chemicals	60	To increase stack	Industry is closed.

	Plot No.10, TTC-MIDC, Mahape, Navi Mumbai.		height . To reduce the effluent load at least by 5 m ³ by recycle, reuse, gardening, etc.	
27	Hindustan Unilever Ltd. Plot No.7, MIDC, Airoli, Navi Mumbai	40	To reduce the effluent load at least by 5 m ³ by recycle, reuse, gardening, etc.	Industry is closed.
28	CETP Plot No.P-60, TTC, Khairane, Navi Mumbai.	26 MLD	To provide PSF and ACF to undertake performance evaluation study and prepare improvement plan accordingly with time frame schedule for implementation.	<ol style="list-style-type: none"> 1. Installed Centrifuge decanters for faster drying and better handling of sludge in 2013 2. Installed Real Time effluent quality online monitoring systems for effluent at both inlet and outlet of CETP. 3. CETP has installed specially designed slow speed agitators 4. Constructed new Equalization Tank 5. Installed RO system having capacity 100 CMD 6. Installed SCADA System

List of solvent Distillation Units proposed to adopt clean Technology in order to minimize liquid & solid waste

Sr. No.	Name of Industries	Status and % Recovery in 2010	Status and % Recovery in 2017
1	M/s Wellchem Laboratories, Plot No. W-183 , TTC Indl Area, MIDC, Navi Mumbai	85	Closed
2	M/s Anuj Organics Ptd. Ltd Plot No. W-151, TTC Indl Area, MIDC, Navi Mumbai	85	Closed
3	M/s Sangdeep Acid Chem Pvt Plot No. C-126, Pawane, TTC Indl Area, MIDC, Navi Mumbai	80	Closed
4	M/s Mehk Chemicals Pvt. Ltd. Plot No.W-6,Pawane, TTC Indl Area,MIDC, Navi Mumbai	90	96
5	M/s Darshan Chemicals Plot No. A-39, TTC Indl Area, MIDC, Navi Mumbai	90	96
6	M/s Sujata Chemicals Plot No. A-146/3, Pawane, TTC Indl Area, MIDC, Navi Mumbai	70	90
7	M/s Suvarna Specility Chemical Plot No. W-465, TTC Indl Area, MIDC, Navi Mumbai	80	Closed
8	M/s Betachem Industries Plot No. W-177, TTC Indl. Area, MIDC, Navi Mumbai	90	96
9	M/s Desmo Exports Ltd. Plot No. C-108, Pawane, TTC Indl Area, MIDC, Navi Mumbaiiq	75	90
10	M/s Rajput Organics Pvt, Ltd. Plot No.D-206, TTC Indl. Area, MIDC,	80	94
11	M/s Darshi Organics Plot No. C-430, TTC Indl. Area, MIDC,	80	Closed
12	M/s Reshma Organic Chemicals Plot No. D-61, TTC Indl. Area, MIDC, Navi Mumbai	80	Mfg Activity Changed to Chemical storage &

			repackaging
13	M/s Padma Plastic Plot No. C-166/2, TTC Indl. Area, MIDC, NM	82	Closed
14	M/s Pratap Organics Plot No. C-481/5, TTC Indl. Area, MIDC, NM	93	96
15	M/s Dhirajlal & Co. Plot No. C-481/1, TTC Indl. Area, MIDC, NM	80	Closed
16	M/s Kaushalya Chemicals Plot No. D-29/3, TTC Indl. Area, MIDC, NM	82	Closed
17	M/s Ester & Solvents Plot No. W-180, TTC Indl. Area, MIDC, NM	83	Mfg Activity Changed to essence mfg.
18	M/s Swastik Chemicals Plot No. W-155, TTC Indl. Area, MIDC, NM	83	95
19	M/s Subel Alloys Co.(I) Ltd., TTC Indl. Area, Navi Mumbai	83	Mfg Activity Changed to lab chemicals mfg.
20	M/s Romal Holding P. Ltd. Plot No. W-292, MIDC, Rabale, Navi Mumbai	85	96
21	M/s Amrutyog Chemicals Plot No. W-297, MIDC, Rabale, Navi Mumbai	84	Closed
22	M/s Sumitra Chemicals Plot No. W-278, MIDC, Rabale, Navi Mumba	90	96
23	M/s JHS Chemi Pharam pvt lt formerly knowen OM Pharmaceuticals Plot No. R-69, MIDC, Navi Mumabai	92	96
24	M/s Oriental Metal Fabrication Plot No. R-382, MIDC, Navi Mumbai	85	Closed
25	Praktan Industries, W 298, MIDC rabale	86	96
26	Sujan Chemoplast, A 697, MIDC Khairane	85	96

2.6.4 Infrastructure Renewal:

2.6.4.1 Details of existing infrastructural facilities: There are following infrastructure existing in Navi Mumbai:

1. **CETP at Khairane.**- Thane Belapur Industrial Association (TBIA) set up a CETP in MIDC, TTC industrial area. The plant of 12 MLD capacity (Phase-I) is in successful operation since 1997. To tackle extra load generated by the industries in TTC industrial area, an additional CETP of 15 MLD capacity (Phase-II) was envisaged and is

commissioned in 2006. CETP scheme was implemented mainly to tackle the problem of liquid effluent generated especially from small scale industrial units (SSI) who are having techno-economic constraints. The facility was also made available to all medium and large scale industrial units with the aim to strengthen the financial feasibility, to get advantage of mixing of treated effluents and utilize the common single disposal system.

2. **CHWTSDF at TTCWMA, Mahape-** In the year 2004 second hazardous waste management facility or collection, Transport, Storage, Treatment and Disposal of composite hazardous waste was set up in Maharashtra at TTC industrial area. This facility was established by TTCWMA.

There are 1340 members of TTCWMA. Approximately 53000 MT of hazardous waste material have been secured landfill method at this site till date. The capacity of this secured landfill site is 170,000 tonnes. New cellof capacity of 1,00,000 tonnes is proposed in future. This TSDF site is in TTC industrial area hence it is very convenient for transportation and disposal of hazardous waste from TTC industrial area.

3. **Sewage Treatment Plants:** There is a Township newly established by CIDCO on the either side of Thane Belapur Road which is known as Navi Mumbai and is governed by Navi Mumbai Municipal corporation (NMMC). Population of the Town is above a million and generation of sewages is 245 MLD. The NMMC have provided 7 Sewage Treatment Plants (STP) at various places. Three of them are fully equipped and working satisfactorily. Another three are being upgraded and time schedule for up-gradation is June, 2011. The seventh STP is to be scrapped and the sewage is to be connected to the nearby STP as feasible. The work is under investigation. At present, it is operating. Details of the STP are already given above.
4. **MSW Scientific landfill Site at Turbhe.:** About 550 MT/D of Municipal solid waste is generated in Navi Mumbai for which NMMC has developed landfill site at Turbhe. The site is already in operation since 2005 where

MSW is disposed off scientifically. NMMC has installed Waste to Compost and RDF (Refuse Derived Fuel) plant and in operation. The leachates from the MSW dumping cells for which leachate treatment plant provided .

2.6.4.2 Need of up gradation of existing facilities:

1. **Up-gradation in STP:** There are 8 STPs at various places in Navi Mumbai provided by NMMC. 7 STPs are fully and the eighth STP which is at Sector- 2, Nerul are being upgraded. The implementation work for up gradation is under progress.
2. **Placement of pipeline for non-covered area** – Most of the area of TTC MIDC is covered with MIDC drainage system which carries effluent of the industries to CETP for further treatment and disposal. The part of TTC MIDC Area particularly at Digha, Airoli, and part of Mahape is now connected with the MIDC drainage system.
3. **Replacement of underground damaged pipelines in industrial area-** MIDC has provided underground pipe line to carry treated industrial effluent from the industry to CETP. However, at some places the pipe line got corrosion which may results in leakages in future. Hence it is necessary to replace the corroded parts. This task has been undertaken by MIDC since financial year 2016.

2.6.4.3. De-silting of water tanks, drains, rivulets, etc.

Most of the TTC area has good network of underground effluent carrying pipe lines/chambers laid by MIDC and are connected to industries. The de-silting of water tanks, drains, rivulets, etc. is carried out on regularly.

2.6.4.4. Construction of lined drains/connections.

MIDC has provided underground drainage system for carrying effluent to CETP. Around 97% area has been covered by lined drains;

remaining area is required to be covered. MIDC has proposal to provide the pipe line accordingly.

2.6.4.5 Treatment and management of contaminated surface water bodies:

Treatment and managements of contaminated surface water bodies is Not Applicable.

2.6.4.6 Rejuvenation/ Management Plan for important eco-geological features is Not Applicable.

2.6.4.7 Carrying of effluent from industrial units located in non-industrial locations to CETP facilities by lined drains/pipeline only and prevention of their disposal into city sewerage/surface drains.

No any effluent is carried from industrial units located in non-industrial locations to CETP.

2.6.4.8. Installation of Gen. sets at CETP.

CETP has already Installed 2 Nos. of Generators having capacity of 900 KVA each with acoustic enclosure.

2.6.5. Managerial and Financial aspects:

2.6.5.1. Cost and time estimates: Regarding the improvement of drainage system, the expenditures to be bared by MIDC. M. P. C. B. will be coordinate with MIDC and will take review of the implementation.

ACTION PLAN FOR WATER ENVIRONMENT: (2010)

Sr. No.	Action Points	Agency	Estimated Cost	Present status (2017)
1	Performance evaluation of water pollution control measures in the 458 industrial units with respect to efficiency, operation, maintenance and	Industries	Online pH Meter, flow meter, U-tube Discharge, Total Amount for all industries having	11 Units had installed online monitoring system. Follow-up with remaining units generating Industrial Effluent < 25CMD is under vigilance.

	implementation of maintenance/ operation charter along with up gradation of Water pollution control equipments		Industrial Effluent < 25CMD is about 2.5 Crore	
2	Performance evaluation of CETP	CETP	8 – 9 Lac	<p>Board has asked to carry out performance evaluation of CETP to know present scenario. Board has issued proposed directions to CETP. After issuance of directions, CETP has carried out in-house performance evaluation study which reveals that:</p> <ol style="list-style-type: none"> Effluent is biodegradable in nature Scope of improvement by introducing oxidizing chemical at primary stage Scope of improvement by introducing anaerobic treatment at secondary stage. <p>CETP has taken further additional steps to enhance the performance of CETP.</p>

3	Taking possession of drainage pipeline carrying effluent to CETP.	CETP & MIDC	--	MIDC Authority vide their letter dt: 01/02/2016 communicated that, in TTC Industrial Area Drainage Network for (underground Effluent collection System) Airoli & Digha (K Block) has been connected to CETP TBIA Navi Mumbai. Work is completed.
4	Providing advance waste water treatment systems.	CETP	Up gradation work = 2.0 Crore	CETP Thane-Belapur Association decided to take a proactive measure to install a tertiary treatment plant to evaluate a option of reuse & recycle of treated effluents. A proven Reverse Osmosis (RO) technology is selected and is installed as a tertiary treatment option. Based on the feasibility / viability, future expansion will be carried out
5	Laying of new effluent carrying pipe line at uncovered area.	MIDC	1. Length of pipeline = 7.0 Km 2. Estimated Cost = 6.0 Cr. 3. Time Schedule = August 2011	Work is completed.

6	Replacement of the damaged pipeline.	MIDC	<ol style="list-style-type: none"> 1. A-Block (14 Km) = 13.0 Cr. 2. R-Block (18 Km) = 16.0 Cr. 	<ul style="list-style-type: none"> • Total length of pipeline (Collection & Disposal) -113 Km • Length of existing HDPE pipeline-15Km • Remodeling with HDPE pipe <ol style="list-style-type: none"> a) Administratively Approved- 2Km b) Proposed for Administrative approval -42Km c) Tender under process -22Km Work in Progress- 7Km
7 7A	<p>Use treated sewage for gardening and industrial purpose.</p> <p>To provide proper sewerage system for slum pockets & connect the sewage to STPs</p>	NMMC NMMC	<p>NMMC has already provided 7 STPs at various locations. NMMC is being proposed accordingly. 15.0 Cr.</p>	<ul style="list-style-type: none"> • The raw sewage generated in NMMC area is 230.00 MLD. • Though the NMMC has installed 7 sewage treatment plant (Total capacity of these Sewage Treatment Plants is to treat 434 MLD). • STP's installed based on Cyclic Activated Sludge Technology (C-Tech) process. C-Tech Technology was found efficient to produce the excellent effluent quality which fulfills the effluent discharge standards & as well Water Recycling requirement for non-potable reusages.

				<ul style="list-style-type: none"> • Presently treated sewage and the treated effluent is being disposed into Vashi Creek and ultimately to Arabian Sea. • Land use pattern, Low lying area unsuitable for development. <p>Navi Mumbai Municipal Corporation, Thane-Belapur) Association is involved in CETP operation is being requested to explore and give the information on the Possibilities to enhance the reuse of treated sewage.</p>
8	Lifting of effluent passed into nalla due to any accident or leakage or chamber overflow into CETP by providing bund on nalla near CETP or other remedy .	MIDC/ CETP	50.0 Lac Period – June 2011.	Necessary action is being taken by concern agency as and when require.

PROPOSED ACTION PLAN FOR WATER ENVIRONMENT: (2017)

Sr. No	Action Points (including source & mitigation measures)	Responsible Stake Holders	Present Status as on 31 st March 2017	Time targets
1	Performance Evaluation of	CETP, MPCB.	MPCB had already carried out a "Report on Assessment of the	Complied +

	CETP		<p>Adequacy of Common Effluent Treatment Plant of Thane-Belapur Association and after going through the report the overall performance is conforming to the conditions imposed in the consent granted to CETP and it is being operate and maintained by the Thane Belapur CETP Association regularly.</p> <p>Performance of CETP is weekly monitored by MPCB & analysis reports Dec-2015 to Dec-2016 shows, percentage sample exceedance is 21.95 %.</p> <p>Board has asked to carry out performance evaluation of CETP to know present scenario.</p> <p>Board has issued proposed directions to CETP. After issuance of directions, CETP has carried out in-house performance evaluation study which reveals that:</p> <ul style="list-style-type: none"> d. Effluent is biodegradable in nature e. Scope of improvement by introducing oxidizing chemical at primary stage f. Scope of improvement by introducing anaerobic treatment at secondary stage. <p>CETP has taken further additional steps to enhance the performance of CETP.</p>	It is regular ongoing activity.
2	Performance Evaluation of ETPs	Industries	➤ There are total 48 no. of Large and Medium Scale Industries generating trade effluent and have provided necessary ETPs.	6 Months

			<ul style="list-style-type: none"> ➤ Those ETPs are being operated regularly. The statement showing the results on monitoring of 48 Nos of Large and Medium Scale Industries is already submitted in previous progress report. ➤ Most of all industries generally meeting the consented standards. ➤ Out of 16 Nos of 17 category industries 11 have installed on-line monitoring system for water quality monitoring at ETP Outlet remaining 4 are SSI units and follow up with for one unit (issued closer direction by CPCB). ➤ Based on monitoring carried out by this office, directions to 05nos of industries under section 33A of Water (P&CP) Act, 1974 for carrying out performance evaluation of ETP's as some of the parameters like BOD, COD, SS & TDS are not meeting the consented standards. ➤ M/s. Modepro India Pvt. Ltd. has carried out performance evaluation from third party and reported that, performance of the ETP is satisfactory. ➤ MPCB is taking further action against remaining 04 industries. 	
3	Improvements in CETP.	CETP	<p>Improvements in CETP-</p> <ul style="list-style-type: none"> 7. Installed on line monitoring system for pH, DO and flow meters. 8. Installed & Commissioned 2 Nos. 20 HP Mixer aerators in 	6 Months

			<p>the aeration tank.</p> <ol style="list-style-type: none"> 9. Installed & Commissioned of Central Control Panel (Mimic Panel) for the plant operators to monitor the functioning of all unit operations from one place and exercise adequate control. 10. Installed Online TOC Analyzer for continuous monitoring of quality of treated effluent in 2004 11. Microbiological laboratory has been set up. 12. Installed CCTV Cameras at various points at the plant process to monitor the operations closely. 13. Installed a pilot plant of 2000 ltrs. for Bio-gas generation by feeding biological sludge with small amount of kitchen waste. 14. Installed Solar PV system of 2.4 KWP for internal lightening 15. Installed Centrifuge decanters for faster drying and better handling of sludge in 2013 16. Installed Real Time effluent quality online monitoring systems for effluent at both inlet and outlet of CETP <ul style="list-style-type: none"> ➤ Board has asked to carry out performance evaluation of CETP to know present scenario. ➤ Board has asked to carry out performance evaluation of 	
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			<p>CETP to know present scenario.</p> <ul style="list-style-type: none"> ➤ Board has issued proposed directions to CETP. After issuance of directions, CETP has carried out in-house performance evaluation study which reveals that: <ul style="list-style-type: none"> a. Effluent is biodegradable in nature b. Scope of improvement by introducing oxidizing chemical at primary stage c. Scope of improvement by introducing anaerobic treatment at secondary stage. <p>Recent Improvements:</p> <ul style="list-style-type: none"> ➤ CETP has installed specially designed slow speed agitators ➤ Constructed new Equalization Tank ➤ Installed RO system having capacity 100 CMD ➤ Installed SCADA System 	
4	Health Impact Assessment Study.	DISH District Health Officer MPCB	<ul style="list-style-type: none"> ➤ DISH, District Health Officer are being requested to give information about health in the industrial area. ➤ DISH is agreed to submit Impact report on regular basis. ➤ DISH informed vide letter dated 16/10/2015 that, as per Rule 18 A of the Maharashtra Factory Act, 1963, it is mandatory on every occupier to carry out health check-up of workers through Authorized Medical Officer. Also informed, 11 industries 	Complied + (Health impact studies to be initiated) 6 Months

			<p>carried out health check-up of 987 workers in 2015.</p> <p>➤ NMMC is supplying treated water in corporation area. The source of water supply is Morabe dam, which is about 30 Km away from the city.</p>	
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2.6.5.2 Identified Private/ Public sector potential investors and their contribution/obligation – Not Applicable

2.6.5.3. Govt. budgetary support requirement:

CETP has already obtained Subsidy for Existing plant during the construction.

2.6.5.4. Hierarchical and structured managerial system for efficient implementation:

CETP (Thane Belapur) Association, is a registered organization under section 25 of Companies act 1956 and is managed by well qualified & experienced Board of Directors.

2.6.6. Self-monitoring system in industries (ETPs etc) :

(i) CETP has self-monitoring & well equipped laboratory for analysis of effluent.

(ii) Some Large and Medium industries are also having in-house laboratory for carrying out the analysis of effluent and some are conducting through outsourcing.

2.6.7. Data linkages to SPCB/CPCB (of monitoring devices)

Proposal is being prepared in centralize manner by MPCB.

Comprehensive Environmental Pollution Index for Water Environment (CEPI):

		A1	A2	A	B1	B2	B3	B	C1	C2	C3	C	D	Water
CPCB	01-12-2009 Max	6	5	30	8	6	6	20	5	5	5	30	20	100
CPCB	Dec-09	3	5	15	8	3	3	14	5	3	5	20	10	59
CPCB	2013	3	5	15	7.5	3	3	13.5	5	4.5	5	27.5	10	66
CPCB	Apr-16	A1	A2	A	Based on SNLF			B	Impact on Human Health ie % increase in cases			C	D	Water
CPCB	April 2016 Max	5	4	20	Primary pollutant = 30	Secondary pollutant = 20		50	less than 5% =0	5-10%=5	More than 10%=10	10	20	100
MPCB	As on 2nd May 2017	2.75	4	11	15	5		20	0	0	0	0	5	36

AIR ENVIRONMENT:

3.1. Present status of Air Environment supported with minimum one year Analytical data.

3.1.1. Critical locations of air quality monitoring

There are three AAQM locations covered under NAMP at Nerul, Mahape and Rabale. These stations being monitored since 2006. Navi Mumbai Municipal Corporation has set up two CAAQM stations at Vashi and Airoli. These stations are in operation. The results are as below;

3.1.2. Present level of pollutants in air (routine parameters, special parameters and air toxics relevant to the area in three categories – known carcinogens, probable carcinogens and other toxics) – To be identified soon.

AMBIENT AIR QUALITY RESULTS (2009)

Standards	SO ₂ in ug/m ³ 80 ug/m ³			Nox in ug/m ³ 80 ug/m ³			RSPM in ug/m ³ 100 ug/m ³		
	Min	Max	Avg.	Min	Max	Avg.	Min	Max	Avg.
Nerul	8.11	27.56	17.30	20.17	68.70	39.56	45.00	171.3 5	90.85
Mahape	8.10	35.10	18.75	23.93	62.80	41.70	49.15	219.6 0	112.0 0
Rabale	10.45	26.85	14.80	20.00	52.10	33.22	36.96	198.7 0	88.13
Vashi	13.00	70.00	28.62	21.00	115.00	70.38	37.00	175.0 0	105.3 0
Airoli	5.00	158.0	25.18	7.00	249.0	91.17	12.00	396.0	134.7 8

Air Quality Index (AQI) (April-2016- March 2017)

Month	Airoli		Koparkhairane		Turbhe	
	AQI	Dominant Parameter	AQI	Dominant Parameter	AQI	Dominant Parameter
Apr-16	101	CO	111	PM10	118	PM10
May-16	80	CO	79	PM10	92	PM10
Jun-16	115	Nox	76	CO	63	PM10
Jul-16	60	PM2.5	88	CO	55	PM10
Aug-16	55	CO	50	PM 10	52	PM 10
Sep-16	73	CO	54	PM10	59	PM 10
Oct-16	83	CO	111	PM10	97	PM 10
Nov-16	86	CO	215	PM 2.5	216	PM 2.5
Dec-16	61	CO	157	PM 2.5	191	PM 2.5
Jan-17	60	CO	131	PM10	154	PM10
Feb-17	70	PM 10	122	PM10	160	PM10
Mar-17	76	PM 10	123	PM10	156	PM10

* Concentrations of minimum three pollutants are required; one of them should be PM10 or PM2.5

* The check displays "1" when a non-zero value is entered

Good (0–50)	Minimal Impact	Poor (201–300)	Breathing discomfort to people on prolonged exposure
Satisfactory (51–100)	Minor breathing discomfort to sensitive people	Very Poor (301–400)	Respiratory illness to the people on prolonged exposure
Moderate (101–200)	Breathing discomfort to the people with lung, heart disease, children and older adults	Severe (>401)	Respiratory effects even on healthy people

3.1.3. Predominant sources contributing to various pollutants.

Following sources are identified which contributes to various pollutants

- (i) Industries – Flue gas, TPM, SPM, SO₂, Nox, Cl₂, NH₃, Acid Mist, VOC etc.
- (ii) Vehicles – SPM, SO₂, RSPM, Nox, Dust particles.
- (iii) Construction activities – Dust particles,
- (iv) Quarries and Stone Crushers – Dust particles.
- (v) Public places – Dust particles.
- (vi) Unauthorized burning of domestic and other waste in residential areas

3.2. Sources of Air Pollution viz industrial, domestic (Coal and Biomass burning), natural and Transport & Heavy Earth Movers :

1. Industry – Fuel burning, Process Emissions, fugitive emission.
2. Domestic – Coal and biomass burning.
3. Transport – Fuel combustion,
4. Heavy Earth Movers – Fugitive emissions.
5. There are around 16 industries using coal as fuel and the total quantity of coal consumed by these industries is around 300 Ton/day.

3.3. Air polluting industries in the area/cluster.

- There are 541 Air Polluting industries in area/cluster. These are of different types and pollutants are differing. Major pollutants are TPM/SPM, SO₂, Nox, NH₃, Cl₂, and VOC from pesticide and bulk drug units.

3.4. Impact of activities of nearby area on the CEPI area.

Besides the industries in TTC MIDC area falling sources are also responsible for impact on air quality in Navi Mumbai area. These are as follows;

1. Quarries and Stone Crushers nearby TTC industrial cluster.
2. Huge transport of Vehicles throughout MIDC and Navi Mumbai residential area.
3. Construction activities in huge quantum.
4. Stationery pollution from public places.
5. Fuel burning in domestic area, especially hotels/houses/bakeries.
6. Unauthorized burning of waste in residential area.

3.5. Quantification of the air pollution load and relative contribution by different sources.

There are multiple source of pollution i.e. industries, Vehicles, Construction activities, hotels, bakeries, Unauthorized burning of waste in residential area, etc. Data will be prepared by conducting survey.

3.6. Action Plan for compliance and control of pollution.

3.6.1. Existing infrastructure facilities.

There are three AAQM locations covered under NAMP at Nerul, Mahape and Rabale. These stations being monitored since 2006. Navi Mumbai Municipal Corporation has set up two CAAQM stations at Vashi and Airoli. These stations are in operation for the last three years.

3.6.2. Pollution control measures installed by the individual source of pollution.

There are various types of industries and hence type of pollutants differ. All the Air polluting industries have provided emission control systems as required i.e. Dust collectors, Scrubbers, and Stack of sufficient height. All the bulk drug and pesticides manufacturing units are being proposed to improve efficiency of their VOC scrubbers. The chemical and dyes units are to be improved their scrubbers and dust collectors. Some units are having coal fired boilers. These units are being proposed to improve efficiency of the wet scrubber and to stick for eco-friendly fuel in

future when Mahanagar gas pipeline supply will be commenced There are about 100 stone crushing units along the northern side of MIDC area. Most of them have provided sprinkler system for dust suppression however, improvements are required. All these units will be proposed to install efficient emission control system.

3.6.3. Technological Intervention.

3.6.3.1. Inventorisation of prominent industries with technological gaps.

Based on assessment studies inventory of the major industries in order to assess further improvements will be prepared.

3.6.3.2 Identification of low cost and advanced cleaner technology for air pollution control.

Five major industries have already adopted Cleaner technology. Remaining major units are being proposed to adopt cleaner technology.

3.6.3.3. Introduction and switch over to cleaner fuel:

M/s. Mahanagar Gas Ltd. Is laying down gas pipe line which is to be commissioned in next year. All the industries will be proposed to use natural gas soon after commissioning of Gas supply.

3.6.4. Need of infrastructure Renovation.

There are three AAQM locations covered under NAMP at Nerul, Mahape and Rabale. These stations being monitored since 2006. Navi Mumbai Municipal Corporation has set up two CAAQM stations at Vashi and Airoli. These stations are in operation for the last three years. All these stations are maintained and functioning properly.

3.6.4.1. Development of roads. Navi Mumbai is interconnected by Asphalt /Cement roads however; internal roads in MIDC area require improvement. NMMC will be proposed to undertake repairing work of the road

3.6.5. Impact of CEPI Score after installation/commissioning of full-fledged air pollution control system.

Comprehensive Environmental Pollution Index for Air Environment

	<u>Air</u>													
		A1	A2	A	B1	B2	B3	B	C1	C2	C3	C	D	Air
CPCB	01-12-2009 Max	6	5	30	8	6	6	20	5	5	5	30	20	100
CPCB	Dec-09	6	5	30	6	0	0	6	3	5	0	15	10	61
CPCB	2013	6	5	30	2	0	0	2	5	1	0	5	10	47
CPCB	Apr-16	A1	A2	A	Based on SNLF			B	Impact on Human Health ie % increase in cases			C	D	Air
CPCB	April 2016 Max	5	4	20	Primary pollutant = 30	Secondary pollutant= 20		50	less than 5% =0	5-10%=5	More than 10%=10	10	20	100
MPC B	As on 2nd May 2017	3.75	4	15	22.5	7.5		30	0	0	0	0	5	50

3.6.6. Managerial and Financial aspects –

3.6.6.1. Cost and Time estimates:

ACTION PLAN FOR AIR ENVIRONMENT (2010):

Sr. No	Action Points	Agency	Estimated Cost	Status (2017)
1	Performance evaluation of Air pollution control measures in the 458 industrial units with respect to efficiency, operation, maintenance and implementation of maintenance/operation charter along with up-gradation of Air pollution control equipment's	Individual Industries	Online Display for: SO ₂ , SPM, Nox = 5.0 Cr. (Total Amount for all Large and medium scale industries.)	15 units had updated PCS and their performance is under vigilance.
2	Inventorizing of Hazardous Air Pollutant emitting units And Installation of Leak Detection and Repair (LDAR) in case of pesticide and bulk drug manufacturing units and	MPCB/ Individual industry	(LDAR =10.0 Lacs) 15 Bulk drug and pesticide industries Total cost: - 1.5 Crores	10 Units out of 16 had installed LDAR system. 2 nos. of units are closed. Follow up with remaining 4 units.
3	Introduction of Cleaner fuel like CNG/LPG	Mahanagar Gas Ltd. & TBIA	12.0 Cr. (Gas stations & pipeline)	69 units switched over to PNG form LDO/FO. Follow up with remaining units.
4	Installation of CAAQM Stations with digital display on screen.	TBIA	60.0 Lacs	The Board has decided to install CAAQMS and finalized Tender process.
5	Setup of new AAQM station	TBIA MPCB	40.0 Lacs Equipment & operation for	Existing 4 Manual operating

			one year	stations under NAMP
6	On Display of AAQM data	TBIA	5.0 Lacs	NMMC has installed AQI display system
7	Development of Green belt & garden	MIDC/ TBIA	1.0 Crore	Thane Belapur Industries Association (TBIA) informed that, over 12,00,000 saplings have been planted in Navi Mumbai area with 90% survival rate.
8	Repairing of internal roads & proper maintenance of the same.	NMMC	1. Length of roads = 95 Km. 2. Cost = 55 Cr. (Work under progress)	There are internal roads of 95 km in TTC MIDC area, Navi Mumbai Municipal Corporation authority informed that 98% construction work of internal roads in MIDC area is completed & the remaining work will be completed at the earliest.

PROPOSED ACTION PLAN FOR WATER ENVIRONMENT: (2017)

Sr. No	Action Points (including source & mitigation measures)	Responsible Stake Holders	Present Status as on 31 st March 2017	Time targets
1	Performance Evaluation of ECS.	Industries	<ul style="list-style-type: none"> ➤ Because of switch over to cleaner fuel, the compliance in respect of the standards of air pollution control has been improved. ➤ Total 69 industries have changed their fuel pattern and using PNG as fuel. ➤ Another 22 industries have submitted their application for change in fuel (Use of PNG) to Mahangar Gas Co ➤ MPCB has issued work order separately to monitor air emissions /effluent discharge from industries in CEPI Area. Accordingly, source emission monitoring of 06 industries carried out during 21/07/2016 to 26/07/2016 &the results shows particulate matter & SO₂ is within consented limit. 	6 Months
2	Inventory of Hazardous air Pollutant emitting units	MPCB/ Individual industry	<ul style="list-style-type: none"> ➤ Presently, 16 industries identified as a Hazardous Air Pollutant emitting units. 	Complied + ongoing work.

	and installation of Leak detection & repair (LDAR) in Case pesticide & bulk drug manufacturing units		<ul style="list-style-type: none"> ➤ This office has issued directions to all 16 industries to install Leak detection & repair system (LDAR) within 06 months. ➤ Presently, 10 industries installed LDAR namely- <ol style="list-style-type: none"> 1. Amines & Plasticizers Ltd. Turbhe 2. Lubrizol Ltd. Turbhe 3. Zydus Takeda Healthcare Ltd. Pawane 4. NOCIL Ltd. Pawane 5. Sandoz Ltd. Turbhe 6. RPG Life Sciences Pawane 7. Lubrizol Ltd. Pawane 8. SI Group Pvt. Ltd. Turbhe 9. Modepro India Pvt. Ltd. 10. Croda Chemicals Ltd. ➤ 02 Units are closed and 04 units are under progress 	
3	Health Impact Assessment Study.	DISH District Health Officer MPCB	<ul style="list-style-type: none"> ➤ DISH, District Health Officer are being requested to give information about health in the industrial area. ➤ DISH is agreed to submit Impact report on regular basis. ➤ DISH informed vide letter dated 16/10/2015 that, as per Rule 18 A of 	Complied (Health impact studies to be initiated) 6 Months

			<p>the Maharashtra Factory Act, 1963, it is mandatory on every occupier to carry out health check-up of workers through Authorized Medical Officer. Also informed, 11 industries carried out health check-up of 987 workers in 2015.</p> <p>➤ NMMC is supplying treated water in corporation area. The source of water supply is Morabe dam, which is about 30 Km away from the city.</p>	
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3.6.6.2. Identified Private / Public sector potential investors & their contribution / Obligation. : Not Relevant.

3.6.6.3. Government Budgetary support requirement: Not Relevant.

3.6.6.4. Hierarchical and structured managerial system for efficient implementation.: Industries and other organization are responsible to implement improvement plans related to them. The cost for the improvement will be bared by the industries. The MPCB will co-ordinate and will take review of the implementation of the above proposal.

3.6.7. Self-monitoring systems in industries (Stacks, APCDs): Some Large and Medium industries are monitoring air emissions regularly through outsourcing.

3.6.8. Data linkage to SPCB/CPCB (of monitoring devices): Proposal is being prepared in centralize manner by MPCB.

4. LAND ENVIRONMENT (Soil and Ground Water)

4.1. Soil Contamination.

Navi Mumbai is totally urbanized area and there is no agricultural land. No any crop is cultivated in this region. In Navi Mumbai, total population is covered with tap water supply. Ground water is not used for drinking purpose. For ground water monitoring, Bore well water at TTCWMA is being monitored. One well is identified nearby MSW site, monitoring will be started soon.

4.1.1. Present status of land environment supported with minimum one year analytical data: Monitoring of Bore well water in the premises of CHWTSDF is carried out regularly and results are given below;

A] Joint sampling & Analysis by MPCB & CPCB Team: Result Bore well of TTC Indl area. -.

Sr. No.	Parameter	Unit	Bore well at Leo Circuit Board Pvt. Ltd., Plot No. D-30/4, TTC,	Bore well No. 3 at Sandoz Pvt. Ltd., Plot No. D-31/32, TTC, MIDC	Bore well No. 1 at Sandoz Pvt. Ltd., Plot No. D-30/4, TTC, MIDC	Bore well at Sharayu Motor, TTC, MIDC	Bore well at Plot No. D-1/142 (PAP), TTC, MIDC
1	pH	-	6.75	7.22	7.5	7.14	6.98
2	Turbidity	NTU	8.8	17.1	24.1	0.2	9.1
3	Total Dissolved Solids	mg/l	681	380	529	401	1823
4	Copper (as Cu)	mg/l	BDL	BDL	BDL	BDL	BDL
5	Fluoride (as F)	mg/l					
6	Iron (as Fe)	mg/l	2.4738	5.2785	4.894	0.0213	0.1496
7	Manganese (as Mn)	mg/l	2.508	2.696	0.0829	0.0662	1.996
8	Nitrate (as NO3)	mg/l	0.99	1.08	0.22	BDL	BDL
9	Sulphate (as SO4)	mg/l	50.3	34.5	33.9	25.4	862
10	Alkalinity (as CaCO3)	mg/l	260	260	134	253	296
11	Total Hardness (as CaCo3)	mg/l	272	226	234	236	1248
12	Zinc (as Zn)	mg/l	2.0412	35.5034	9.1695	1.8807	1.741
13	Cadmium (as Cd)	mg/l	BDL	BDL	BDL	BDL	BDL
14	Lead (as Pb)	mg/l	BDL	BDL	BDL	BDL	BDL
15	Mercury (as Hg)	mg/l	4.14	3.14	2.81	1.81	3.47
16	Nickel (as Ni)	mg/l	BDL	BDL	BDL	BDL	BDL
17	Total Arsenic (as As)	mg/l	BDL	BDL	BDL	BDL	BDL
18	Total Chromium (as Cr)	mg/l	BDL	BDL	BDL	BDL	BDL

B] Analysis Report of Open well of TTC Industrial Area:

Sr. No.	Parameter	Unit	Acceptable Limit as per Drinking Water Specification-IS 10500:2012	Applicant inds Locations: Borwell sample of M/s.Leo Circuit Board	MPCB Monitoring , Analysed by MPCB Central Lab Except one sample dated (Analysed by Aswamedh Engineers & Consultants Lab) ...				
					Locations: Borwell sample of M/s.Leo Circuit Board.	Locations: Borwell sample of M/s.Sandoz Private Limited	Sampling date:	Sampling date:	Sampling date:
				Dated 02.04.2016 (Analysed by Aswamedh Engineers & Consultants Lab)	Sampling date: 1.6.2016	Sampling date: 9.9.2016	Sampling date: 01/06/2016	21/07/2016	9.9.2016
1	Colours	Hazen	Max. 5	1				1	
2	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
3	pH	-	6.5 to 8.5	7	7	7.4	7.7	7.21	6.9
4	Turbidity	NTU	Max. 1	BDL (DL:0.1)	2.6	0.76	5.8	0.5	2.86
5	Total Dissolved Solids	mg/l	Max. 500	392	342	636	..	..	402
8	Chloride (as Cl)	mg/l	Max. 250	75.9	89	106	32.5	..	46
9	Copper (as Cu)	mg/l	Max. 0.05	BDL (DL:0.2)	0.01	0.02	0.01	<0.02	BDL
10	Fluoride (as F)	mg/l	Max. 1	BDL (DL:0.05)	0.3	0.32	BDL		0.66
11	Iron (as Fe)	mg/l	Max. 0.3	0.099	0.83	0.22	1.31	3.61	0.31
12	Magnesium (as Mg)	mg/l	Max. 30	31.6	..		..

13	Manganese (as Mn)	mg/l	Max. 0.1	1.26	..	0.02	..	<u>0.683</u>	0.03
14	Mineral Oil	mg/l	Max. 0.5	BDL (DL:0.005)	..		..	..
15	Nitrate (as NO3)	mg/l	Max. 45	0.99	..	1.49	..		2.08
16	Selenium (as Se)	mg/l	Max. 0.01	BDL (DL:0.005)	..	..	..	<0.005	..
18	Sulphate (as SO4)	mg/l	Max. 200	29.3	58.9	51	..	..	187
19	Alkalinity (as CaCO3)	mg/l	Max. 200	239	198	240	172	..	222
20	Total Hardness (as CaCO3)	mg/l	Max. 200	269	50	316	184	..	204
21	Zinc (as Zn)	mg/l	Max. 5	0.056		0.11		<0.05	0.14
22	Cadmium (as Cd)	mg/l	Max. 0.003	BDL (DL:0.002)	..	BDL	..	..	BDL
23	Lead (as Pb)	mg/l	Max. 0.01	BDL (DL:0.008)	0.01	BDL	0.06	0.008	BDL
24	Mercury (as Hg)	mg/l	Max. 0.001	BDL (DL:0.008)	BDL	BDL	BDL	<0.0008	BDL
25	Molybdenum (as Mo)	mg/l	Max. 0.07	BDL (DL:0.002)			..	..	..
26	Nickel (as Ni)	mg/l	Max. 0.02	0.027	0.02	BDL	BDL	0.016	BDL
27	Total Arsenic (as As)	mg/l	Max. 0.01	BDL (DL:0.005)	BDL	BDL	BDL	<0.005	BDL
28	Total Chromium (as Cr)	mg/l	Max. 0.05	BDL (DL:0.02)		0.01	0.08	<0.02	BDL

C] Analysis Report of Open well of TTC Industrial Area:

Year 2013-2014

Sr. No.	Parameters	5/4/2013	11/4/2014	8/5/2014	13/6/2014	10/7/2014	10/9/2014	13/10/2014	12/11/2014
1	Faecal Coliform	110	20	30	17	13	10	17	34
2	Total Coliform	350	50	70	30	33	17	30	63
3	Mg Hardness	52	8	202	16	22	12	140	18
4	BOD	3.4	4.2	15	4.8	4.2	4.2	8	4
5	C.O.D	20	20	40	20	16	16	24	16
6	Dissolve Oxygen	6.8	7.9	4.4	7.8	6.9	6.6	6.5	6.4
7	pH	7.6	7.5	7.7	7.9	8.3	7.5	8.3	7.6
8	Suspended Solids	8	8	8	8	10	10	8	12
9	Phosphate	0.25	0.28	0.45	0.3	0.08	0.01	0.03	0.02
10	Boron	0.33	BDL	0.24	0.1	0.1	0.11	0.1	0.1
11	Chlorides	33.5	13.5	102	25	25	9	108	56
12	Fluoride	0.5	0.5	0.7	0.1	0.6	0.1	0.1	0.8
13	Nitrate Nitrogen	0.8	0.8	2.7	0.3	0.2	0.3	1.5	0.2
14	Sulphate	16.3	3.2	42.7	3.3	3.7	0.3	111.1	3.9
15	Potassium	1.4	1	6	1	1	1	1	1.2
16	Sodium	20.1	6.9	79.9	3.2	5	4	98.9	14
17	TKN as N	5	0.6	0.6	0.6	0.6	1.1	0.6	0.6
18	Ca Hardness	98	34	110	28	28	24	162	28
19	Conductivity	340.9	113	900	93	105.7	84.2	826.3	254.1
20	T.D.Solids	302	97	766	88	95	69.6	750	203
21	TotalAlkalinity	136	42	318	42	46	32	286	36
22	Total Hardness for demo	150	42	312	44	50	36	302	46

D] Analysis Report of Open well of TTC Industrial Area: Year 2013-2014

Sr. No.	Parameters	8/7/2015	8/1/2016	10/3/2016	6/4/2016	6/5/2016	8/7/2016	5/8/2016	6/9/2016	4/10/2016	3/11/2016	3/12/2016	4/1/2017
1	Faecal Coliform	33	79	240	14	11	22	11	7.8	7.8	1.8	2	9.3
2	Total Coliform	170	240	540	46	31	70	26	17	22	4	9.2	22
3	Mg Hardness	388	4	6	4640	190	6	36	4	174	16	138	8
4	BOD	4	2.8	2.6	18	4	3.8	4.2	3	3.8	3	7	3.4
5	C.O.D	12	12	12	152	16	16	16	16	12	16	36	20
6	Dissolve Oxygen	6.3	6.9	6.6	3.8	5.9	6.6	6.5	6.6	6.4	7.4	5.7	7.2
7	pH	7.9	7.5	7.6	7.4	7.5	7.4	7	8	7.1	8.1	7.5	7.6
8	Suspended Solids	18	8	12	12	12	12	8	10	8	8	8	12
9	Phosphate	0.08	BDL	0.18	0.2	BDL	BDL	0.08	0.08	0.31	0.06	3.6	2.29
10	Boron	0.76	BDL	BDL	0.22	0.1	BDL	0.11	0.1	0.91	0.18	0.84	0.16
11	Chlorides	1479.5	7	8	24492.4	118	4.5	4	5.5	118	8.5	105	14
12	Fluoride	1.2	0.2	0.7	4	0.2	0.4	0.4	BDL	BDL	0.8	BDL	BDL
13	Nitrate Nitrogen	0.7	0.8	0.4	2.3	0.7	1.2	1.2	0.9	6.2	0.4	4.3	0.67
14	Sulphate	152.4	6.2	2.3	3078	75.7	11.6	7.3	4	98.3	1	33.6	5.5
15	Potassium	19.6	-	-	-	-	-	-	-	-	1	17.3	2
16	Sodium	546	-	-	-	-	-	-	-	-	4	48.2	7
17	TKN as N	0.6	0.6	0.6	9	1.7	2.2	1.1	2.8	2.2	1.7	1.1	1.1
18	Ca Hardness	116	16	16	1320	140	22	4	30	122	28	134	30
19	Conductivity	4743	98.1	108.6	46810	761	108	113.2	97.4	982.4	97.2	1063	146.2
20	T.D.Solids	4268	88	98	43650	685	98	102	82	882	87	957	117

21	TotalAlkalinity	66	78	68	43650	138	42	52	38	262	44	256	60
22	Total Hardness for demo	504	20	22	5960	330	28	70	34	296	44	272	38
23	Turbidity From Instrument	1.7	0.3	0.4	0.5	0.3	1.5	0.3	0.3	0.2	0.3	0.6	0.4
24	Phenolphthelene Alkalinity	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25	Total Ammonical Nitrogen	0.1	BDL	0.1	0.6	0.4	0.2	0.1	0.5	1	1.1	0.6	0.4
26	Total Fixed Solids	3841	79	88	38849	610	88	91	66	785	78	852	105

Analysis Report of of Groundwater Monitored by MPCB at CHWT SDF facility Mahape :

Year 2013

Para meter/Date	Limits	31/01/13	15/02/13	25/03/13	16/05/13	26/06/13	30/08/13	23/09/13	22/10/13	30/11/13	18/12/13
pH	5.5 to 9	8.0	7.2	9.0	8.9	8.1	7.5	7.7	7.6	8.1	6.2
BOD	100 mg/l	9.0	4.0	5.0	6.0	5.0	16.0	17.0	6.0	22.0	10.0
COD	250 mg/l	36.0	16.0	20.0	56.0	24.0	56.0	64.0	32.0	72.0	40.0
Oil & Grease	20 mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Suspended Solids	100 mg/l	10.0	12.0	10.0	-	8.0	8.0	8.0	14.0	10.0	32.0
Arsenic (As)	0.2 mg.l	-	-	-	BDL	-	BDL	BDL	BDL	1.1	BDL
Boron	-	-	-	0.7	-	3.21	-	-	-	-	-
Ca Hardness	-	190.0	172.0	96.0	-	100.0	-	-	-	-	-
Cadmium (CD)	2 mg/l	-	-	-	-	-	BDL	BDL	BDL	BDL	BDL

Chlorides	600 mg/l	118.0	-	131.0	-	24.0	-	-	-	-	-
Chromium (Hexa)	0.1 mg/l	BDL	BDL	-	-	-	-	-	-	-	-
Conductivity	-	821.7	768.3	504.6	-	617.0	-	-	-	-	-
Copper (Cu)	3 mg/l	0.04	BDL	-	0.01	-	BDL	BDL	BDL	BDL	0.02
Cynide (CN)	0.2 mg/l	-	-	-	BDL	-	BDL	BDL	BDL	BDL	BDL
Detergent	2 mg/l	BDL	BDL	-	-	-	-	-	-	-	-
Dissolve Oxygen	-	3.9	-	6.7	-	-	-	-	-	-	-
Fluoride (as F)	15 mg/l	-	-	10.6	1.4	0.4	0.2	0.5	0.1	2.1	0.7
Iron	3 mg/l	0.2	0.6	1.6	-	0.15	-	-	-	-	-
Lead (as Pb)	1 mg/l	BDL	0.2	-	BDL	-	BDL	BDL	0.1	BDL	0.28
Mercury (Hg)	0.01 mg/l	BDL	BDL	-	0.067	-	BDL	BDL	BDL	BDL	BDL
Mg Hardness	-	12.0	30.0	-	-	-	-	-	-	-	-
Nickel (As Ni)	5 mg/l	BDL	BDL	-	BDL	-	BDL	BDL	BDL	0.9	0.08
Nitrate Nitrogen	-	1.7	3.3	3.2	1.0	0.4	1.9	0.1	0.2	-	0.3
Nitrite Nitrogen	-	0.7	0.9	-	-	-	-	-	-	-	-
Pesticides	Absent	-	-	-	BDL	-	-	-	-	-	-
Phenol	1 mg/l	BDL	0.03	-	BDL	-	BDL	BDL	BDL	BDL	BDL
Phenolphthelene Alkalinity	-	-	BDL	-	-	-	-	-	-	-	-
Phosphate	5 mg/l	-	1.25	3.65	-	1.7	-	-	-	-	-
Potassium	-	-	-	11.2	-	0.6	-	-	-	-	-
Salinity	-	-	-	-	0.2	-	-	-	-	-	-
Sodium	60%	-	14.4	35.2	-	14.1	-	-	-	-	-

Sulphide (S)	5 mg/l	BDL	BDL	-	-	-	BDL	BDL	-	BDL	BDL
Sulphate	1000 mg/l	82.8	76.9	77.7	-	8.0	-	-	-		
TAN	50 mg/l	BDL	0.1	-	-	-	-	-	-	0.5	
TDS	2100 mg/l	690.0	631.0	423.0	-	562.0	-	-	-		
TKN (as N)	100 mg/l	0.6	1.6	2.3	-	8.4	1.3	1.1	1.1		0.3
TRC	1 mg/l	-	BDL	-	8.0		BDL	BDL	BDL	BDL	BDL
Total Alkalinity	-	-	-	24.0	-	32.0	-	-	-	-	
Total Chromium (Cr)	2 mg/l	-	-	-	0.14	-	BDL	BDL	BDL	BDL	BDL
Total Hardness for demo	-	202.0	202.0	-	-	-	-	-	-	-	
Turbidity from Instrument	-	0.6	0.5	-	-	-	-	-	-	-	
Zinc (Zn)	15 mg/l	0.1	BDL	-	0.77	-	BDL	BDL	BDL	1.1	0.8

2014

Analysis results – Borewell at TTCWMA

Parameter /Date	Limits	20/01/2014	24/02/2014	26/03/2014	22/05/2014	20/06/2014	07/07/2014	05/08/2014	06/09/2014	26/11/2014	03/12/2014
Code No.		02638	02721	02781	02893	02941	02965	03024	03083	03218	03237
pH	5.5 to 9	9.2	7.6	7.9	8.2	8.9	8.5	8.6	8.3	8.0	8.7
BOD	100 mg/l	5.0	140.0	5.0	11.0	5.0	6.4	5.6	6.0	6.0	10.0
COD	250	20.0	592.0	20.0	44.0	24.0	20.0	16.0	16.0	20.0	28.0

	mg/l										
Oil & Grease	20 mg/l	BDL	2.4	BDL	BDL	BDL	BDL	BDL	BDL	14	BDL
Suspended Solids	100 mg/l	10.0	56	10.0	8.00	8.0	10.0	8.0	10.0	BDL	20.0
Arsenic	0.2 mg/l	BDL	-	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Cadmium (CD)	2 mg/l	BDL	0.01	0.01	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Copper	3 mg/l	0.03	BDL	BDL	0.01	0.06	0.01	0.08	BDL	BDL	BDL
Cynide	0.2 mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Fluoride	15 mg/l	0.1	3.1	1.0	BDL	0.5	0.9	0.3	1.1	1.2	0.2
Lead	1 mg/l	BDL	BDL	0.05	BDL	0.02	BDL	0.01	BDL	0.1	BDL
Mercury	0.01 mg/l	BDL	0.004	BDL	0.037	BDL	0.251	0.003	0.002	0.001	0.003
Nickel	5 mg/l	0.04	0.1	0.14	0.01	BDL	BDL	0.01	BDL	BDL	BDL
Nitrate Nitrogen	-	0.5	0.6	0.9	0.1	0.9	0.3	0.4	0.9	1.9	0.2
Phenol	1 mg/l	BDL	BDL	BDL	BDL	BDL	1.42	-	BDL	0.21	0.42
Sulphide	5 mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
TKN (as N)	100 mg/l	1.1	1.7	0.6	0.6	0.6	1.1	1.7	1.7	0.6	0.6
TRC	-	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Total Chromium	2 mg/l	0.05	0.15	BDL	0.01	0.8	0.8	BDL	BDL	BDL	BDL
Zinc (Zn)	15 mg/l	0.49	0.22	1.88	0.12	BDL	0.14	0.27	0.08	0.11	0.13

2015 Analysis results – Borewell at TTCWMA

Parameter /Date	Limits	08/01/2015	04/02/2015	09/03/2015	30/06/2015	31/07/2015	25/08/2015	31/12/2015
Code No.		03297	03346	03391	03558	03608	03655	03821
pH	5.5 to 9	7.2	7.8	8.2	8.7	8.5	8.3	6.9
BOD	100 mg/l	4.8	9.0	5.8	8.0	12.0	5.0	6.0
COD	250 mg/l	24.0	40.0	20.0	24.0	32.0	16.0	16.0
Oil & Grease	20 mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Suspended Solids	100 mg/l	12.0	16.0	12.0	8.0	8.0	8.0	10.0
Arsenic	0.2 mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Cadmium (CD)	2 mg/l	0.03	0.03	0.03	0.03	BDL	BDL	0.2
Chlorides	-	-	-	-	-	-	-	-
Copper	3 mg/l	BDL	0.01	BDL	0.14	BDL	0.1	0.2
Cycnide	0.2 mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Dissolve Oxygen	-	-	-	-	-	-	-	-
Fluoride	15 mg/l	0.4	0.53	BDL	0.4	0.1	0.9	0.6
Iron	-	-	-	-	-	-	-	0.09
Lead	1 mg/l	BDL	BDL	BDL	BDL	BDL	0.01	BDL
Mercury	0.01 mg/l	BDL	BDL	BDL	BDL	BDL	0.01	0.001
Nickel	5 mg/l	0.01	0.37	0.11	BDL	0.04	0.02	0.05
Nitrate Nitrogen	-	6.8	1.8	0.7	0.6	0.8	0.7	1.0

Phenol	1 mg/l	BDL	0.05	BDL	BDL	BDL	BDL	BDL
Sulphide	5 mg/l	BDL	BDL	BDL	BDL	BDL	BDL	-
Sulphate	1000 mg/l	-	-	-	-	93.1	-	-
TAN	50 mg/l	-	-	-	-	-	-	-
TKN (as N)	100 mg/l	1.1	6.7	0.6	5.0	2.8	2.2	123.8
TRC	-	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Total Chromium	2 mg/l	0.86	BDL	0.02	BDL	BDL	BDL	-
TDS	2100 mg/l	-	-	-	-	507.0	-	-
Zinc (Zn)	15 mg/l	0.07	0.13	0.41	0.6	0.14	0.08	0.02

2016: Analysis results – Borewell at TTCWMA

Parameter /Date	Limits	28/01/2016	19/03/2016	28/06/2016	13/07/2016	11/08/2016	26/09/2016	09/11/2016
Code No.		03859	03897	03940	03946	03974	03988	04002
pH	5.5 to 9	8.1	8.8	7.0	8.4	6.2	6.9	8.1
BOD	100 mg/l	15.0	7.0	82.0	74.0	11.0	6.0	7.0
COD	250 mg/l	56.0	20.0	206.0	208.0	40.0	24.0	24.0
Oil & Grease	20 mg/l	-	BDL	BDL	BDL	BDL	BDL	BDL
SS	100 mg/l	8.0	10.0	10.0	10.0	10.0	8.0	8.0
Arsenic	0.2 mg.l	-	-	BDL	BDL	-	-	BDL
Cadmium (CD)	2 mg/l	0.02	0.01	BDL	0.02	BDL	BDL	BDL

Chlorides	-	123.0	-	55.5	37.5	-	-	201.9
Copper	3 mg/l	0.07	0.63	BDL	0.1	-	BDL	BDL
Cyicide	0.2 mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Dissolve Oxygen	-	5.0	-	BDL	-	-	-	5.6
Fluoride	15 mg/l	1.4	0.6	1.2	1.5	1.4	1.2	0.5
Iron	-	-	-	0.22	-	-	-	BDL
Lead	1 mg/l	0.06	BDL	0.6	0.24	0.4	0.06	0.01
Mercury	0.01 mg/l	0.002	0.004	0.004	BDL	BDL	0.005	0.001
Nickel	5 mg/l	0.15	0.04	0.18	0.68	0.0	0.17	0.03
Nitrate Nitrogen	-	43.4	0.6	1.5	0.4	BDL	-	0.9
Phenol	1 mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Sulphide	5 mg/l	BDL	BDL	BDL	-	BDL	BDL	BDL
Sulphate	1000 mg/l	8.4	-	88.1	56.5	98.1	-	65.4
TAN	50 mg/l	-	0.1	0.1	0.3	0.2	0.1	0.6
TKN (as N)	100 mg/l	0.6	0.6	3.9	3.9	3.9	1.7	1.7
TRC	-	BDL	BDL	BDL	BDL	BDL	-	BDL
Total Chromium	2 mg/l	BDL	0.74	1.66	0.14	0.2	0.03	BDL
TDS	2100 mg/l	640.0	594.0	543.0	476.0	723.0	-	592.0
Zinc (Zn)	15 mg/l	BDL	0.07	0.22	0.2	0.2	0.16	BDL

4.1.2. Critical locations for land / soil pollution assessment and ground water monitoring.

There are two locations which may be considered as critical locations. i.e. MSW site at Turbhe and CHWTSDF at Mahape. The bore well water at Mahape is being monitored regularly. Another ground water source is to be identified nearby MSW site.

4.1.3. Present levels of pollutants in land / soil and ground water (routine parameters, special parameters and air toxics relevant to the area in three categories – known carcinogens, probable carcinogens and other toxics).

Bore well water at CHWTSDF premises is being monitored regularly. From the results, it seems that ground water in the above vicinity is not deteriorated.

4.1.4. Predominant sources contributing or posing danger of pollution of land and ground water such as hazardous / toxic wastes or chemicals dumps / storage etc.

Not identified.

4.1.5. Sources of Soil Contamination.

Most of the area of TTC MIDC is covered with MIDC drainage system which carries effluent of the industries to CETP for further treatment and disposal. Little part of TTC MIDC Area particularly at Digha, Airoli, and part of Mahape is not connected with the MIDC drainage system due to topography. The major units are using their treated effluent for gardening in non-monsoon season and discharging treated effluent to CETP by tankers in monsoon and quantity of effluent is about 40 m³/day. Small units are discharging their treated effluent into the nearby nalla and hence colored water is seen in the nallas sometime. All the units are member of CETP. Necessary follow up will be taken with MIDC for providing drainage system for the uncovered area.

4.1.6. Types of existing pollution.

No relevant.

4.1.7. Remedies for abatement, treatment and restoration of normal soil quality.

Total Navi Mumbai area including MIDC estate is fully urbanized. There no land for cultivation of crops and hence, there no contamination of soil.

4.2. Ground water contamination.

4.2.1. Present status / quality of ground water.

Results of Bore well water at TTCWMA – CHWTSDF are given above, and it states that ground water is not contaminated.

4.2.2. Source Identification (Existing sources of Ground water Pollution)

Not relevant.

4.2.3. Ground water quality monitoring program.

Bore well water at TTCWMA – CHWTSDF is monitored regularly and another source nearby MSW site is being identified and will be monitored regularly.

4.2.4. Action Plan for control of pollution including cost / time aspects.

ACTION PLAN FOR LAND ENVIRONMENT (2010) :

Sr. No	Action Points	Agency	Estimated Cost	Status (2017)
1	Scientific Disposal of municipal solid waste.	NMMC	NMMC has already developed disposal facility which is already in operation. They had appointed M/s NEERI to study problems and to suggest proper measures. Accordingly, NEERI has suggested certain measures. Implantation work is going on.	NMMC had installed fulfilled Leachate Treatment plant. Also installed Waste to Compost and RDF plant.

2	Scientific disposal of Hazardous Waste.	TTC-WMA	CHWTSDF has already being provided at TTC, MIDC Area & the facility is in operation.	The TSDF site was commissioned in the year 2004. TTCWMA is operating a Secured Landfill Facility. The first landfill is permanently capped; the second landfill is in operation.
3.	Scientific disposal of Bio-medical Waste.	Health Care units/ MWM L	M/s.Mumbai Waste Management Ltd.(MWML) has developed disposal facility for BMW at MIDC, Taloja, Dist.Raigad. All the BMW in Navi Mumbai is collected and disposed scientifically by MWML.	All the 325 HCE are the member units of MWML and disposing the waste regularly.

PROPOSED ACTION PLAN FOR WATER ENVIRONMENT: (2017)

Sr. No	Action Points (including source & mitigation measures)	Responsible Stake Holders	Present Status as on 31 st March 2017	Time targets
1	Monitoring of the Industries for compliance of CEPI norms	MPCB/ Individual industry	<ul style="list-style-type: none"> ➤ Point wise periodical review taken. ➤ Reduction due to closed industries (57 Industries were closed) :- <ul style="list-style-type: none"> ✓ BOD- 800.49 T/A ✓ COD - 1855.59 T/A ✓ SO2 - 17300.50 T/A ✓ HW - 14926.10 T/A 	Complied + Ongoing

			<ul style="list-style-type: none"> ➤ Review meeting of CEPI Navi Mumbai TTC Ind Cluster had been taken under the Chairmanship of The Principal Secretary (Environment Dept) & Member Secretary MPC Board on, 15/05/2015, 30/09/2015 & 09/02/2016, 19/10/2016 at MPC Board HQ Sion Mumbai. ➤ Review meeting of stake holders involved CEPI Action Plan taken by Board Office on 12/05/2016, 24/05/2016, 31/08/2016, 30/09/2016, 09/11/2016 & 04/1/2017 	
2	Health Impact Assessment Study.	DISH District Health Officer MPCB	<ul style="list-style-type: none"> ➤ DISH, District Health Officer are being requested to give information about health in the industrial area. ➤ DISH is agreed to submit Impact report on regular basis. ➤ DISH informed vide letter dated 16/10/2015 that, as per Rule 18 A of the Maharashtra Factory Act, 1963, it is mandatory on every occupier to carry out health check-up of workers through Authorized Medical Officer. Also informed, 11 industries carried out health check-up of 987 workers in 2015. ➤ NMMC is supplying treated water in corporation area. The source of water supply is 	Complied (Health impact studies to be initiated) 6 Months

			Morabe dam, which is about 30 Km away from the city.	
3	Monitoring of ground water at MSW/TSDF site.	MPCB	<ul style="list-style-type: none"> MPCB is regularly monitoring ground water quality at CHWTSDF & MSW site and analysis reports shows ground water quality is not chemically deteriorated. The Board has also carried out Ground water quality at CHWTSDF & MSW Turbhe site during 21/07/2016 to 26/07/2016 from external agency at 02 locations in TTC area & results shows that, there is no any abnormality in ground water quality. 	Complied + Ongoing

4.2.5. Treatment and management of contaminated ground water bodies, etc.

Not relevant.

4.2.6. Impact on CEPI score after abatement of pollution.

Comprehensive Environmental Pollution Index for Land Environment :

	Land													
		A1	A2	A	B1	B2	B3	B	C1	C2	C3	C	D	Land
CPCB	01-12-2009 Max	6	5	30	8	6	6	20	5	5	5	30	20	100
CPCB	Dec-09	3	5	15	6	1.5	3	10.5	5	3	5	20	10	55.5
CPCB	2013..	3	5	15	2	3	3	8	5	1	5	10	10	43
CPCB	April 2016	A1	A2	A	Based on SNLF			B	Impact on Human Health ie % increase in cases			C	D	Land
CPCB	April 2016 Max	5	4	20	Primary pollutant = 30	Secoundary pollutant = 20		50	less than 5% = 0	5-10% = 5	More than 10% = 10	10	20	100
MPC B	As on 2nd May 2017	2.75	4	11	15	5		20	0	0	0	0	5	36

4.3. Solid waste Generation and management.

4.3.1. Waste Classification and Quantification

4.3.1.1. Hazardous Waste - 17665 T/M (2009)

4.3.1.2. Bio-medical waste - Approx.250 T/Year.

4.3.1.3. Electronic waste - Data Not available.

4.3.1.4. Municipal solid waste – 550 T/day.

4.3.1.5. Plastic waste - Data not available.

4.3.1.6. Quantification of wastes and relative contribution from different sources.

There are multiple source of waste i.e. Industrial process waste, ETP Sludge, MSW, waste from commercial sectors and service industries. Data will be prepared by conducting survey.

4.3.2. Identification of waste minimization and waste exchange option.

Data not available.

4.3.3. Reduction / Reuse / Recovery / Recycle option in co-processing waste.

NMMC has developed MSW disposal site. The wet garbage is to be converted into compost and refuse derived fuel. The project is under construction and will be commissioned by October 2010. There are two cells which are completed and capped with soil, NMMC has decided to recover methane gas by suction method. The project is under consideration.

4.3.4. Infrastructure facilities.

4.3.4.1. Existing TSDF / Incineration facilities including capacities.

1. TTC Waste Management Association:

In the year 2004 second hazardous waste management facility or collection, Transport, Storage, Treatment and Disposal of composite hazardous waste was set up in Maharashtra at TTC industrial area. This facility was established by TTCWMA.

The policy of TTCWMA is to maintain highest standards of quality of disposal methods by confirming to environmentally friendly, safe, economic methods. There are 1340 members of TTCWMA. Approximately 53000 MT of hazardous waste material has been disposed by secured landfill method at this site. The capacity of this secured landfill site is 1,70,000 . New cell of capacity of 1,00,000 MT is proposed in future. This TSDF site is located in TTC industrial area hence it is very convenient for transportation and disposal of hazardous waste from TTC industrial area.

The authority of TTCWMA has provided all technical vigilance system to protect the environment.

2. MSW Scientific landfill Site at Turbhe : About 80% of the Domestic solid waste generated from house to house is collected by small vehicles “Ghanta Gadi” as well as compactors and loaded in refuse transportation vehicles mechanically on daily basis. Community bins are provided at different places for collection of domestic solid waste (wet & dry) by Navi Mumbai Municipal Corporation (NMMC) for remaining 20 % solid waste. The waste stored in community bins are also lifted on daily basis. The details of Bins provided by NMMC area . About 550 MT/D of Municipal solid waste is generated in Navi Mumbai for which NMMC has developed landfill site at Turbhe. The site is already in operation since 2005 where MSW is disposed off scientifically. NMMC has installed Waste to Compost and RDF (Refuse Derived Fuel) project. There are leachates from the MSW dumping cells for which leachate treatment plant is also installed and in operational.

NAVI MUMBAI NMMC SOLID WASTE MANAGEMENT SITE – TURBHE



MSW DUMPING SITE MSW & LEACHATE COLLECTION TANK

Present status of MSW generation treatment and disposal

[C] FACILITY AT ABOVE SITE			
	Quantity (T/D)	Already set up	In Operational
Only Dumping	-	-	-
Segregation	500	√	√
landfill	130	√	√
Composting	150	√	√
Vermicomposting	350	√	√
RDF	150	√	√

3. Status of CHWT SDF SITE – MAHAPE: The TSDF site was commissioned in the year 2004. TTCWMA is operating a Secured Landfill Facility. The first landfill is permanently capped; the second landfill is in operation.

Facility Name : Trans Thane Creek Waste Management Association

Address : P-128, Shil Mahape Road, Near L&T Infotech, Mahape, Mavi Mumbai 400710.

MPCB Consent No. : BO/RO(HQ)/HWMD/EIC No. NM-4786-13/CR/CC-231 dated 03.06.2015

MPCB Consent Validity : Upto 30.09.2018.

Total Area of site : 83,000 Sqr. Mtr.

Total Number of Cells : 3

Sr.	Landfill	Capacity	Status
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No.	Cell No.		
1	Landfill Cell No. 1	50,000MT	<ol style="list-style-type: none"> 1. Constructed in 2004. Permanently closed on 2010. 2. Total quantity disposed in the same is 50,000MT. 3. Size: 60Mtr X 65Mtr.
2	Landfill Cell No. 2	3,25,000MT	<ol style="list-style-type: none"> 1. Constructed in 2010. 2. Under operation. 3. Total quantity disposed in the same is 2,95,000 MT. 4. Size: 149Mtr X 155Mtr
3	Landfill Cell No. 3	2,00,000 MT	<ol style="list-style-type: none"> 1. Constructed in April 2017. 2. Not yet in operation. 3. Size: 98 Mtr X 100 Mtr.

Total Members: 1942.

Total Members from Navi Mumbai Area: 715.

Total Waste Disposed (Period April 2016 to March 2017.)

Area	Direct Landfill (DLF) Quantity in MT	Landfill After Treatment (LAT) Quantity in MT	Total Quantity in MT.
Navi Mumbai	268.805MT	6946.991MT	7215.796 MT
Mumbai	979.358MT	188.977 MT	1168.335 MT
Kalyan	987.947MT	1231.572 MT	2219.519 MT
Thane	29.162MT	395.945MT	425.107 MT
Raigad	37.380MT	0.550MT	37.930 MT
Total	2302.652 MT	8764.035 MT	11066.687 MT

Pictorial View of CHWT SDF, Mahape

<u>2010</u>	<u>2017</u>
	
	
<u>New cell Development 2017</u>	
	

4.3.4.2. Present status / Performance and need of up-gradation of existing facilities including enhancement of capacities.

CHWTSDF is developed fully and no up-gradation is not required at present. MSW site is also fully developed for the conventional treatment i.e composting and RDF project is going under progress.

4.3.4.3. Treatment and management of contaminated waste disposal sites.

Hazardous waste from Navi Mumbai area is disposed at CHWTSDF Mahape. The site is fully developed scientifically. No any other site is identified where hazardous waste is disposed unauthorized.

MSW site at Turbhe is also developed scientifically where MSW from Navi Mumbai is disposed off in scientific manner.

4.3.4.4. Impact on CEPI score after proper management of solid waste.

After implementation, the CEPI score will be reduced by 20. Details are shown in para 4.2.6.

5. PPP Model

5.1. Identification of project proposals (for both the options i.e. technology interventions and infrastructure renewal) for implementation under the PPP Mode under the Action Plan.

NMMC is being proposed to developed technology for achievement of sewage quality to use the treated sewage for industrial use, construction activities, etc. Also at present, they have option to utilize the treated sewage for gardening. Considering the huge area of gardens, NMMC can use most of the treated sewage for gardening. The NMMC as well as CETP authorities will be followed for similar line of action.

Navi Mumbai: An Eco City Project

Sponsor: NMMC (Navi Mumbai Municipal Corporation)

Duration: 2012 – 2018 Status: On-going Navi Mumbai, a planned twin city of Mumbai, is ready to take up another stride towards sustainability through a joint venture of TERI and NMMC (Navi Mumbai Municipal Corporation) under the project “ECO-CITY”. Cutting across three major sectors- residential, industrial, and government, the Eco-city project shall be accomplished in two phases in the span of three years. Phase I focussed on estimating the city level

carbon emissions of Navi Mumbai and preparing a comprehensive action plan for implementing the Eco-city project. The ongoing Phase II of the project shall witness the implementation of the action plan developed in Phase I. The project shall be unique in terms of its implementation as the plan and its execution would be a simultaneous and an integrative process. Overall, the project would be implemented as a PPP model (Public-Private Partnership), with a strong participatory role played by the public as well as private sector of Navi Mumbai

5.2. Identification of Stakeholders/Agencies to be involved and to evolve financial and managerial mechanism for implementation of PPP projects.

The responsible stakeholders i.e. CETP, Navi Mumbai will implement the above project. These projects would give them commercial benefits and hence they should manage financial aspects for implementation of projects.

6. Other infrastructural Renewal measure:

6.1. Green Belts - NMMC , Industries, MIDC as well as local NGOs are planting trees every monsoon. One NGO i.e. Green hope organization has planted about two lacs of trees at various places in Navi Mumbai and they have planned to plant about 10 lacs trees in future in Navi Mumbai.

6.2. Development of Industrial Estate(s) . Not proposed

6.3. Development / shifting of industries located in the non – industrial areas to the existing / new industrial estates.

Not proposed.

7. Specific Scheme:

7.1. GIS-GPS system for pollution sources monitoring.	Not relevant
7.2. Hydro-geological fracturing for water bodies rejuvenation.	Not relevant
7.3. In-situ remediation of sewage.	Not relevant
7.4. Utilization of MSW inert by gas based brick kilns.	Not relevant
7.5. Co-processing of wastes in cement industries.	Not relevant

8. Public awareness and training programmes.

- To Organize Drawing competition in School & Colleges for making clean environment.
- Distribution of hand bills of safety measures to be adopted during accident.
- Posters and Banners displaying environmental awareness.
- To arrange Road Shows at public places.
- Arranging Lectures, Speech, Demonstration of the activities through School, Colleges, etc.

Overall Impact of installation/commissioning of pollution control equipments /measures on the CEPI Score

Air														
		A1	A2	A	B1	B2	B3	B	C1	C2	C3	C	D	Air
CPCB	2009 Max	6	5	30	8	6	6	20	5	5	5	30	20	100
CPCB	2009	6	5	30	6	0	0	6	3	5	0	15	10	61
CPCB	2013	6	5	30	2	0	0	2	5	1	0	5	10	47
CPCB	Apr-16	A1	A2	A	Based on SNLF			B	Impact on Human Health ie % increase in cases			C	D	Air
CPCB	April 2016 Max	5	4	20	Primary pollutant = 30	Secondary pollutant= 20		50	less tan 5% =0	5-10%=5	More than 10%=10	10	20	100
MPCB	As on 2nd May 2017	3.75	4	15	22.5	7.5		30	0	0	0	0	5	50
Water														
		A1	A2	A	B1	B2	B3	B	C1	C2	C3	C	D	Water
CPCB	2009 Max	6	5	30	8	6	6	20	5	5	5	30	20	100
CPCB	2009	3	5	15	8	3	3	14	5	3	5	20	10	59
CPCB	2013	3	5	15	7.5	3	3	13.5	5	4.5	5	27.5	10	66
CPCB	Apr-16	A1	A2	A	Based on SNLF			B	Impact on Human Health ie % increase in cases			C	D	Water
CPCB	April 2016 Max	5	4	20	Primary pollutant = 30	Secondary pollutant= 20		50	less tan 5% =0	5-10%=5	More than 10%=10	10	20	100
MPCB	As on 2nd May 2017	2.75	4	11	15	5		20	0	0	0	0	5	36
Land														

		A1	A2	A	B1	B2	B3	B	C1	C2	C3	C	D	Land
CPCB	2009 Max	6	5	30	8	6	6	20	5	5	5	30	20	100
CPCB	2009	3	5	15	6	1.5	3	10.5	5	3	5	20	10	55.5
CPCB	2013..	3	5	15	2	3	3	8	5	1	5	10	10	43
CPCB	April 2016	A1	A2	A	Based on SNLF			B	Impact on Human Health ie % increase in cases			C	D	Land
CPCB	April 2016 Max	5	4	20	Primary pollutant = 30	Secondary pollutant= 20		50	less than 5% =0	5-10%=5	More than 10%=10	10	20	100
MPCB	As on 2nd May 2017	2.75	4	11	15	5		20	0	0	0	0	5	36
A=Source,B=Pathway ,C=Receptor and D=Additional high risk including Infrastructures									CPCB	2009..	TOTAL CEPI INDEX			73.77
									CPCB	2013...	TOTAL CEPI INDEX			72.87
									MPCB	2nd May 2017	TOTAL CEPI INDEX			56.48

9. Overall Impact of installation/commissioning of pollution control equipments /measures on the CEPI Score.

Year	Air	Water	Land	Total aggregate score as per CPCB	Total aggregate score as per MPCB as on 2 nd May 2017
2009	61	59	55.5	73.77	
2013	47	66	43	72.87	
2017	50	36	36		56.48

10. Assessment of Techno-economical feasibility of pollution control equipment / measure on the CEPI score.

- 10.1. Industrial Effluent: The entire effluent from TTC MIDC area is received at CETP for further treatment and disposal. The treated effluent is discharged into TTC creek through closed pipeline. CETP is working satisfactory and achieving standards.
- 10.2. Domestic effluent: NMMC has provided Eight STPs at various places which are also working satisfactorily.
- 10.3. Hazardous waste disposal: The TTCWMA has provided CHWTSDF at Mahape where hazardous waste is disposed in scientific manner.
- 10.4. NMMC has developed MSW site at Turbhe where MSW is disposed in scientific manner.
- 10.5. Some major industries, about 20 Nos. which were major contributors in all type of pollution (Water, Air, HW) are closed permanently. Therefore, there is remarkable decline in pollution load.
- 10.6. All the major units have provided full-fledged Emission control systems, Effluent Treatment plants, and disposing of hazardous waste to CHWTSDF.

Thus at present all above infrastructure is working satisfactory.

1. Considering the performance of the ETPs in industries as well as CETP and STPs the CEPI score given to Water CEPI i.e. A1, B1 and D (AHRE) would have been quite less as considered by CPCB.
2. Considering the performance of the CHWTSDF the CEPI score given to Land CEPI i.e. A1, B1 and D (AHRE) would have been quite less as considered by CPCB.
3. Considering the performance of the Emission control system of the industries, as well as closure of major 20 industries, and major contribution of other sources of air pollution the CEPI score given to Air CEPI i.e. A1, B1 and D (AHRE) would have been quite less as considered by CPCB.

Besides the above it is also to mention that there are no considerable eco-geological features in Navi Mumbai area as well as there is no evidence of impact on people, the score given to B2 and B3 for Water, Air and Land CEPI would have been quite less as considered by CPCB.

11. Efforts shall be made to encourage use of Bio-compost and Bio-Fertilizer along with the chemical fertilizer in the state to minimize the unutilized chemical fertilizer run-off into the natural water resources from agriculture fields (through Govt. policy)

This point will be covered in public awareness program.

12. Other Issues – CEPI Action Plan:

12.1 Achievements & Major Highlights Points on CEPI Action Plan – TTC MIDC Cluster Navi Mumbai

Sr. No	Particulars	Action Points (including source & mitigation measures)	Responsible Stake Holders	Present Status as on 31 st March 2017	Time Line

1	Infrastructure Developments				
	1.1	Repairs of Internal Roads in MIDC area.	NMMC	There are internal roads of 95 km in TTC MIDC area, Navi Mumbai Municipal Corporation authority informed that 98% construction work of internal roads in MIDC area is completed & the remaining work will be completed at the earliest.	Work is completed.
	1.2	Uncovered area will be connected to CETP	MIDC, CETP, MPCB.	MIDC Authority vide their letter dt: 01/02/2016 communicated that, in TTC Industrial Area Drainage Network for (underground Effluent collection System) Airoli & Digha (K Block) has been connected to CETP TBIA Navi Mumbai.	Work is completed.
	1.3	Replacement of damaged pipeline. The replacement of old/damaged pipelines by the new one has not been completed.	MIDC	<ul style="list-style-type: none"> • Total length of pipeline (Collection & Disposal) -113 Km • Length of existing HDPE pipeline- 15Km • Remodeling with HDPE pipe d) Administratively Approved- 2Km e) Proposed for Administrative 	Ongoing New action points time line 2 Years

				<p>approval -42Km</p> <p>f) Tender under process -22Km</p> <p>g) Work in Progress-7Km</p>	
	1.4	Installation of CAAQM Stations with digital display on screen.	TBI A	<p>➤ There are 4 nos of CAAQMS stations are operating at four stations viz Nerul Garden, Airoli, Turbhe MSW Site &Koparkhairane by the Navi Mumbai Municipal Corporation. (Monitoring 12 parameters as per National Air Quality Standards).</p> <p>➤ The Air Quality Index (AQI) of period <u>April to March 2017</u> shows AQI is satisfactory (51-100) to moderate (101-200). In Nov 2016 Air quality at Turbhe&Koparkhairane is poor due to particulate matter& temperature inversion phenomenon in the winter season.</p> <p>➤ The dominant parameters are Particulate matter</p>	Time line 2 Years

				& CO, may be due to growing vehicular traffic and construction projects as well as commercial and infrastructure development including road construction etc.	
2	Water Environment				
	2.1	Performance Evaluation of ETPs	Industries	<ul style="list-style-type: none"> ➤ There are total 48 no. of Large and Medium Scale Industries generating trade effluent and have provided necessary ETPs. ➤ Those ETPs are being operated regularly. The statement showing the results on monitoring of 48 Nos of Large and Medium Scale Industries is already submitted in previous progress report. ➤ Most of all industries generally meeting the consented standards. ➤ Based on monitoring carried out by this office, directions to 05nos of industries 	Performance Evaluation of ETPs

				<p>under section 33A of Water (P&CP) Act, 1974 for carrying out performance evaluation of ETP's as some of the parameters like BOD, COD, SS & TDS are not meeting the consented standards.</p> <ul style="list-style-type: none"> ➤ M/s. Modepro India Pvt. Ltd. has carried out performance evaluation from third party and reported that, performance of the ETP is satisfactory. ➤ MPCB is taking further action against remaining 04 industries. 	
	2.3	Online Monitoring of Effluent	Industries	<ul style="list-style-type: none"> ➤ Out of 16 Nos of 17 category industries 11 have installed on-line monitoring system for water quality monitoring at ETP Outlet remaining 4 are SSI units and follow up with for one unit (issued closer direction by CPCB). 	
	2.4	STP	NMMC	Population of the Town is above a million.	

				Requirement of water for the Township is 317 MLD which is fulfilled by Morbe, Barvi and Hetwane dam, and generation of sewages is 245 MLD. The NMMC have provided 8 Sewage Treatment Plants (STP) at various places. All of them are fully equipped and working satisfactorily.	
3	Air Environment				
	3.1	Change in fuel	Industries	Total 69 industries have changed their fuel pattern and using PNG as fuel and the remaining 13 industries using coal as fuel has been directed to switch over for use of PNG, However because of economical viability out these 13 units 11 has upgraded ECS and provided Bag filter and ventury scrubbers. Work in progress for remaining 2 units.	
	3.2	Installation of VOC analyzer	Industries	Total 16 industries have been identified to install VOC analyzer. Out this 10 industries	

				have installed VOC analyzer system. 2 units not in operation. And remaining 4 units has been directed for compliance.	
	3.4	Stone Crusher		Dust suppression measures at the stone crusher cluster found to be in effective Trucks carrying the crushed stone material not covering the material that is being transported.	
4	MSW Management				
	4.1	Scientific Disposal of MSW. (500 MT/D)	NMMC	MSW disposal site i.e. installation of leachate treatment plant, waste to Compost and RDF projects etc. are completed and operating satisfactory.	Complied
	4.2	Leachate Treatment	NMMC	NMMC has Provided leachate treatment plant and in operation satisfactory	
5	HW Management				
	5.1	CHWDSDF Facility		The TSDF site was commissioned in the year 2004. TTCWMA is operating a Secured Landfill Facility. The first landfill is permanently capped; the second landfill is in operation. Bore well water at	

				CHWTSDF premises are being monitored regularly. From the results, it seems that ground water in the above vicinity is not deteriorated	
	5.2	Inventory of Hazardous air Pollutant emitting units and installation of Leak detection & repair (LDAR) in Case pesticide & bulk drug manufacturing units	MPCB/Individual industry	<ul style="list-style-type: none"> ➤ Presently, 16 industries identified as a Hazardous Air Pollutant emitting units. ➤ This office has issued directions to all 16 industries to install Leak detection & repair system (LDAR) within 06 months. ➤ Presently, 10 industries installed LDAR namely- <ol style="list-style-type: none"> 1. Amines & Plasticizers Ltd. Turbhe 2. Lubrizol Ltd. Turbhe 3. Zydus Takeda Healthcare Ltd. Pawane 4. NOCIL Ltd. Pawane 5. Sandoz Ltd. Turbhe 6. RPG Life Sciences Pawane 7. Lubrizol Ltd. Pawane 8. SI Group Pvt. 	

				<p>Ltd. Turbhe 9. Modepro India Pvt. Ltd. 10. Groda Chemicals Ltd.</p> <p>➤ 02 Units are closed and 04 units are under progress</p>	
	5.4	Recovery of Solvent by solvent using units.	Industries	<p>➤ There 24 Solvent distillation Units out which 12 are operational and remaining 11 units closed&01 unit not involved in waste solvent recovery.</p> <p>➤ 12 Operational Solvent Distillation Units has enhanced recovery of solvent capacity from existing 75% to 96% recovery of solvent (all operational units achieved their solvent recovery up to 96%).</p>	
6	BMW Management				
	6.1	Scientific disposal of Bio-medical Waste.	Health Care units/M WML	M/s.Mumbai Waste Management Ltd.(MWML) has developed disposal facility for BMW at MIDC, Taloja, Dist.Raigad. All the BMW in Navi Mumbai	

				is collected and disposed scientifically by MWML.	
7	Special Efforts	ECO City	NMMC	A joint venture of TERI and NMMC (Navi Mumbai Municipal Corporation) under the project "ECO-CITY". Cutting across three major sectors- residential, industrial, and government, the Eco-city project shall be accomplished in two phases in the span of three years. Phase I focussed on estimating the city level carbon emissions of Navi Mumbai and preparing a comprehensive action plan for implementing the Eco-city project. The ongoing Phase II of the project shall witness the implementation of the action plan developed in Phase I. Overall, the project would be implemented as a PPP model (Public-Private Partnership), with a strong participatory role played by the public as well as private sector of Navi Mumbai	

8	Other issues		<p>A. State level Committee to be headed by the Chief Secretary :- In the state of Maharashtra under the chairmanship of Hon'ble Principal Secretary Environment Department had taken review of action plans on 15.05.2015, further the stake holder Committee headed by Member Secretary MPCB was taking review of action plans quarterly. Also Regional Officer MPCB is taking review of action plans in consultation with stake holders at local level.</p> <p>B. District level Committee headed by District Magistrate :- The District level Committee headed by District Magistrate will be formed shortly, for Review of action plan for the Industrial Cluster, Navi Mumbai towards improving Comprehensive Environmental</p>	
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			Pollution Index (CEPI).	
9	CEPI Index improvement			
			<ul style="list-style-type: none"> ➤ CPCB had carried out Comprehensive Environmental Assessment of 88 industrial clusters in country in Dec 2009 based on the Comprehensive Environment Assessment and Comprehensive Environmental Pollution Index(CEPI). ➤ The CEPI was developed by number of prominent academic institutions, led by IIT Delhi which were also associated with the field level assessments. ➤ Navi Mumbai was one of them having aggregate CEPI Score 73.77 in the year 2009. ➤ CEPI Score as per MPCB Calculation 56.48 as on March 2017 	

13. REVISED CEPI ACTION PLAN-NAVI MUMBAI

13.1. Short Term Action Point (upto 1 year, including continuous Activities)

Sr. No	Action Points (including source & mitigation measures)	Responsible Stake Holders	Present Status as on 31 st March 2017	Time targets
1	Uncovered area will be connected to CETP	MIDC, CETP, MPCB.	MIDC Authority vide their letter dt: 01/02/2016 communicated that, in TTC Industrial Area Drainage Network for (underground Effluent collection System) Airoli & Digha (K Block) has been connected to CETP TBIA Navi Mumbai. Work is completed.	Complied
2	Performance Evaluation of CETP	CETP, MPCB.	MPCB had already carried out a "Report on Assessment of the Adequacy of Common Effluent Treatment Plant of Thane-Belapur Association and after going through the report the overall performance is conforming to the conditions imposed in the consent granted to CETP and it is being operate and maintained by the Thane Belapur CETP Association regularly. Performance of CETP is weekly monitored by MPCB & analysis reports Dec-2015 to Dec-2016 shows, percentage sample exceedance is 21.95 %. Board has asked to carry out performance evaluation of CETP to know present scenario. Board has issued proposed directions to	Complied As it is regular activity ongoing.

			<p>CETP. After issuance of directions, CETP has carried out in-house performance evaluation study which reveals that:</p> <ul style="list-style-type: none"> g. Effluent is biodegradable in nature h. Scope of improvement by introducing oxidizing chemical at primary stage i. Scope of improvement by introducing anaerobic treatment at secondary stage. <p>CETP has taken further additional steps to enhance the performance of CETP.</p>	
3	Performance Evaluation of ETPs	Industries	<ul style="list-style-type: none"> ➤ There are total 48 no. of Large and Medium Scale Industries generating trade effluent and have provided necessary ETPs. ➤ Those ETPs are being operated regularly. The statement showing the results on monitoring of 48 Nos of Large and Medium Scale Industries is already submitted in previous progress report. ➤ Most of all industries generally meeting the consented standards. ➤ Out of 16 Nos of 17 category industries 11 have installed on-line monitoring system for water quality monitoring at ETP Outlet remaining 4 are SSI units and follow up with for one unit (issued closer direction by CPCB). ➤ Based on monitoring carried out by this office, directions to 05nos of industries under section 33A of Water (P&CP) Act, 1974 for carrying out performance evaluation 	6 Months

			<p>of ETP's as some of the parameters like BOD, COD, SS & TDS are not meeting the consented standards.</p> <ul style="list-style-type: none"> ➤ M/s. Modepro India Pvt. Ltd. has carried out performance evaluation from third party and reported that, performance of the ETP is satisfactory. ➤ MPCB is taking further action against remaining 04 industries. 	
4	Performance Evaluation of ECS.	Industries	<ul style="list-style-type: none"> ➤ Because of switch over to cleaner fuel, the compliance in respect of the standards of air pollution control has been improved. ➤ Total 69 industries have changed their fuel pattern and using PNG as fuel. ➤ Another 22 industries have submitted their application for change in fuel (Use of PNG) to Mahangar Gas Co ➤ MPCB has issued work order separately to monitor air emissions /effluent discharge from industries in CEPI Area. Accordingly, source emission monitoring of 06 industries carried out during 21/07/2016 to 26/07/2016 & the results shows particulate matter & SO₂ is within consented limit. 	6 Months
5	Repairs of Internal Roads in MIDC area.	NMMC	There are internal roads of 95 km in TTC MIDC area, Navi Mumbai Municipal Corporation authority informed that 98% construction work of internal roads in MIDC area is completed & the remaining work will be completed at the earliest.	Complied
6	Taking	CETP,	<ul style="list-style-type: none"> ➤ Treated effluent of the MIDC area 	Complied

	possession of drainage pipeline carrying effluent to CETP.	MIDC, MPCB as Nodal Agency	<p>is collected at Thane Belapur CETP through MIDC drainage system.</p> <ul style="list-style-type: none"> ➤ Part of system is under possession of MIDC and part under possession of CETP. ➤ CETP & MIDC officials giving quick response in case of accidental breakages. 	
7	Online display of AAQM data.	TBIA MPCB as Nodal Agency	<ul style="list-style-type: none"> ➤ AAQM is carried out at 3 locations by MPCB under NAMP (Mahape, Nerul & Rabale (TBIA Rabale) for measurement of parameters – SO₂, NO_X, RSPM , SPM & results of the same displayed on MPCB website at http:// www. mpcb. gov. in /envtdata /demoPage1.php ➤ Also, there are four automatic online display centers (CAAQMS) installed by NMMC at four locations viz, Airoli Fire Station, Turbhe MSW Site, Koparkhiarne& Nerul garden. Air Quality Index (AQI) is displayed in public domain at http://www.mpcb.gov.in/envtdata/demoPage1.php on MPC Board website ➤ The Board also carried out AAQM during 21/07/2016 to 26/07/2016 at 06 locations in TTC area & the results shows that, Ambient Air Quality is within the NAAQS. ➤ Board has started manual AAQM station at MIDC Mahape as per the directives of Hon'ble NGT, which also shows particulate matter concentration is higher than the NAAQMS. ➤ 	Complied

8	Inventory of Hazardous air Pollutant emitting units and installation of Leak detection & repair (LDAR) in Case pesticide & bulk drug manufacturing units	MPCB/ Individual industry	<ul style="list-style-type: none"> ➤ Presently, 16 industries identified as a Hazardous Air Pollutant emitting units. ➤ This office has issued directions to all 16 industries to install Leak detection & repair system (LDAR) within 06 months. ➤ Presently, 10 industries installed LDAR namely- <ul style="list-style-type: none"> 11. Amines & Plasticizers Ltd. Turbhe 12. Lubrizol Ltd. Turbhe 13. Zydus Takeda Healthcare Ltd. Pawane 14. NOCIL Ltd. Pawane 15. Sandoz Ltd. Turbhe 16. RPG Life Sciences Pawane 17. Lubrizol Ltd. Pawane 18. SI Group Pvt. Ltd. Turbhe 19. Modepro India Pvt. Ltd. 20. Croda Chemicals Ltd. ➤ 02 Units are closed and 04 units are under progress 	Complied + ongoing work.
9	Monitoring of the Industries for compliance of CEPI norms	MPCB/ Individual industry	<ul style="list-style-type: none"> ➤ Point wise periodical review taken. ➤ Reduction due to closed industries (57 Industries were closed) :- <ul style="list-style-type: none"> ✓ BOD- 800.49 T/A ✓ COD - 1855.59 T/A ✓ SO₂ - 17300.50 T/A ✓ HW - 14926.10 T/A ➤ Review meeting of CEPI Navi Mumbai TTC Ind Cluster had been taken under the Chairmanship of The Principal Secretary (Environment Dept) & Member Secretary MPC Board on, 15/05/2015, 30/09/2015 & 	Complied

			<p>09/02/2016, 19/10/2016 at MPC Board HQ Sion Mumbai.</p> <ul style="list-style-type: none"> ➤ Review meeting of stake holders involved CEPI Action Plan taken by Board Office on 12/05/2016, 24/05/2016, 31/08/2016, 30/09/2016, 09/11/2016 & 04/1/2017 	
10	Recovery of Solvent by solvent using units.	Industries	<ul style="list-style-type: none"> ➤ Bulk Drugs units are using solvents in their process and generate waste solvents ➤ All major industries have installed their own solvent recovery system at their site. ➤ At present, they are sending waste solvents to authorized party. ➤ There 24 Solvent distillation Units out which 12 are operational and remaining 11 units closed & 01 unit not involved in waste solvent recovery ➤ Board has issued directions u/s 31 (A) of Air (P&CP) Act to solvent reprocessing units to enhance the recovery of solvent up to 96%. Accordingly, all operational units achieved their solvent recovery up to 96%. 	Complied
11	Health Impact Assessment Study.	DISH District Health Officer MPCB	<ul style="list-style-type: none"> ➤ DISH, District Health Officer are being requested to give information about health in the industrial area. ➤ DISH is agreed to submit Impact report on regular basis. ➤ DISH informed vide letter dated 16/10/2015 that, as per Rule 18 A of the Maharashtra Factory Act, 1963, it is mandatory on every occupier to carry out health check- 	Complied (Health impact studies to be initiated) 6 Months

			<p>up of workers through Authorized Medical Officer. Also informed, 11 industries carried out health check-up of 987 workers in 2015.</p> <p>➤ NMMC is supplying treated water in corporation area. The source of water supply is Morabe dam, which is about 30 Km away from the city.</p>	
12	Monitoring of ground water at MSW/TSDF site.	MPCB	<ul style="list-style-type: none"> • MPCB is regularly monitoring ground water quality at CHWTSDF & MSW site and analysis reports shows ground water quality is not chemically deteriorated. • The Board has also carried out Ground water quality at CHWTSDF & MSW Turbhe site during 21/07/2016 to 26/07/2016 from external agency at 02 locations in TTC area & results shows that, there is no any abnormality in ground water quality. 	Complied
13	Improvements in CETP.	CETP	<p>Improvements in CETP-</p> <p>17. Installed on line monitoring system for pH, DO and flow meters.</p> <p>18. Installed & Commissioned 2 Nos. 20 HP Mixer aerators in the aeration tank.</p> <p>19. Installed & Commissioned of Central Control Panel (Mimic Panel) for the plant operators to monitor the functioning of all unit operations from one place and exercise adequate control.</p> <p>20. Installed Online TOC Analyzer for continuous monitoring of quality of treated effluent in 2004</p> <p>21. Microbiological laboratory has</p>	6 Months

			<p>been set up.</p> <p>22. Installed CCTV Cameras at various points at the plant process to monitor the operations closely.</p> <p>23. Installed a pilot plant of 2000 ltrs. for Bio-gas generation by feeding biological sludge with small amount of kitchen waste.</p> <p>24. Installed Solar PV system of 2.4 KWP for internal lightening</p> <p>25. Installed Centrifuge decanters for faster drying and better handling of sludge in 2013</p> <p>26. Installed Real Time effluent quality online monitoring systems for effluent at both inlet and outlet of CETP</p> <p>➤ Board has asked to carry out performance evaluation of CETP to know present scenario.</p> <p>➤ Board has asked to carry out performance evaluation of CETP to know present scenario.</p> <p>➤ Board has issued proposed directions to CETP. After issuance of directions, CETP has carried out in-house performance evaluation study which reveals that:</p> <p>d. Effluent is biodegradable in nature</p> <p>e. Scope of improvement by introducing oxidizing chemical at primary stage</p> <p>f. Scope of improvement by introducing anaerobic treatment</p>	
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			<p>at secondary stage.</p> <p>Recent Improvements:</p> <ul style="list-style-type: none"> ➤ CETP has installed specially designed slow speed agitators ➤ Constructed new Equalization Tank ➤ Installed RO system having capacity 100 CMD ➤ Installed SCADA System 	
14	Installation of VOC analyzer	Industries	Total 16 industries have been identified to install VOC analyzer. Out this 10 industries have installed VOC analyzer system. 2 units not in operation. And remaining 4 units has been directed for compliance.	6 Months
15	Set up of New AAQM Station	TBIA and MPCB	<ul style="list-style-type: none"> ➤ Already there are three AAQM Stations (NAMP) established by MPCB (Nerul, Rabale, Mahape). ➤ In view of CEPI Action Plan, the Board has taken positive/ effective steps for installation of CAAQM Stations at Mahape CEPI area, which shall be commissioned within next 06 months, as tender bids are opened on 18/8/2016 & purchase order will be issued shortly. ➤ The Board has installed one manual Ambient Air Quality Monitoring Station on 18.8.2016 at Plot No P-128 MIDC Mahape, TTC Navi Mumbai and started monitoring of 12 parameters (Sulphur Dioxide, Nitrogen Dioxide, Particulate matter (PM10), Particulate Matter (PM2.5), Ozone, Lead, Carbon 	6 Months

			Monoxide, Ammonia, Benzene, Benzo(a)Pyrene(BaP), Arsenic and Nickel) as prescribed in the Notification 2009. This station is operated on weekly basis till installation of CAAQM Stations	
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12.2. Long Term Action Points (more than 1 year)

Sr. No	Action Points (including source & mitigation measures)	Responsible Stake Holders	Present Status as on 31 st March 2017	Time targets
1.	Improvements in CETP.	CETP	<ul style="list-style-type: none"> CETP (Thane-Belapur) Association is involved in treatment of industrial effluents generated from TTC industrial area and total 27 MLD CETP is in successful operation since almost 15 years Performance of CETP is weekly monitored by MPCB & analysis reports Jan -2016 to Feb-2017 shows, percentage sample exceedance is 21.95 %. Performance evaluation of CETP through external agency appointed by CETP on 10.03.2017 & the said work is under progress, further CETP has installed Reverse Osmosis (RO) plant as a tertiary treatment option (pilot study). Based on the feasibility / viability, future expansion will be carried out. 	1 year

2	Up gradation of Individual ETPs	Industries	<p>➤ All the major industries had improved their treatment system to reduce pollutant load at least by 10%. Recently 3 nos of industries upgraded their existing ETP which was reported in last progress report as –</p> <ol style="list-style-type: none"> 1. M/s. Soujanya ColourPvt Ltd Plot no: C-35 & 36 TTC MIDC Pawane 2. M/s. Zydus Takeda Health Care Pvt Ltd Plot no: C-4 TTC MIDC Pawane. Navi Mumbai (Installed RO System for 50% effluent generated) 3. M/s. RPG Life Sciences Pvt. Ltd. Plot No. 25, MIDC Pawane, Navi Mumbai 	Complied
3	Change in fuel	Industries	Total 69 industries have changed their fuel pattern and using PNG as fuel and the remaining 13 industries using coal as fuel has been directed to switch over for use of PNG, however because of economic viability out these 13 units 11 has upgraded ECS and provided Bag filter and ventury scrubbers. Work in progress for remaining 2 units.	1 Year
4	Improvement in ECS	Industries	Individual 13 units which have upgraded ECS. Monitoring of these units will be carrying out.	1 Year
5	Replacement of damaged pipeline. The replacement of	MIDC	<ul style="list-style-type: none"> • Total length of pipeline (Collection & Disposal) -113 Km • Length of existing HDPE pipeline-15Km 	2 Years

	old/damaged pipelines by the new one has not been completed.		<ul style="list-style-type: none"> • Remodeling with HDPE pipe h) Administratively Approved-2Km i) Proposed for Administrative approval -42Km j) Tender under process -22Km k) Work in Progress-7Km 	
6	To provide proper sewerage system for slum pockets & connects the sewage to STPs & use of treated sewage for gardening & industrial purpose	MIDC/ NMMC	<ul style="list-style-type: none"> • Recently NMMC/ MIDC have jointly removed the illegal encroachment in MIDC area. • A Detail DPR is under progress after finalization of the same appropriate action will be taken. • Concern local bodies are being requested to submit updated information in this regard. 	2 Years
7	Installation of CAAQM Stations with digital display on screen.	TBIA	<ul style="list-style-type: none"> ➤ There are 4 nos of CAAQMS stations are operating at four stations viz Nerul Garden, Airoli, Turbhe MSW Site &Kopar khiarne by the Navi Mumbai Municipal Corporation. (Monitoring 12 parameters as per National Air Quality Standards). ➤ The Air Quality Index (AQI) of period <u>April to March 2017</u> shows AQI is satisfactory (51-100) to moderate (101-200). In Nov 2016 Air quality at Turbhe& Koparkhairane is poor due to particulate matter& temperature inversion phenomenon in the winter season. 	Complied

			<p>➤ The dominant parameters are Particulate matter & CO, may be due to growing vehicular traffic and construction projects as well as commercial and infrastructure development including road construction etc.</p>	
8	Development of green belt & garden.	MIDC/ TBIA	<p>Thane Belapur Industries Association (TBIA) informed that, over 12,00,000 saplings have been planted in Navi Mumbai area with 90% survival rate.</p> <p>MPC Board has issued letter vide dt: 12/05/2016 to carry out tree plantation programme by special drive during rainy season every year.</p> <p>The Board has recently taken special drive of mass tree plantation in Maharashtra. Accordingly, around 8000 nos of trees planted in TTC area. About 60000 nos. of trees planted at Village Ane, Kalyan by industries located in TTC area.</p> <p>Plantation is regularly carried out by MIDC TBIA, Individual industries & Navi Mumbai Municipal Corporation.</p>	Complied
9	Scientific Disposal of MSW. (500 MT/D)	NMMC	MSW disposal site i.e. installation of leachate treatment plant, waste to Compost and RDF projects etc. are completed and operating satisfactory.	Complied

10	Minimization of waste by the industries	Industries	Require detail inventory of hazardous waste generating units. Progress report in this regard will be submitted.	1 Year
11	Installation of Supervisory control and data acquisition (SCADA)	Industry CETP MPCB	<p>A system for remote monitoring and control that operates with coded signals over communication channels for industries generating more than 100 CMD trade effluents, as a mitigative measures towards leakage of effluent carrying pipeline.</p> <p>In this direction issued to CETP and work is under progress.</p> <p>Total 15 nos of industries installed SCADA system.</p>	1 Year
12	Air pollution control measures for stone crusher units.	MPCB Stone Crusher Units	<p>These units are one of the sources of air pollution. The Board has constituted field team comprising of members of NEERI & IIT and carried out extensive survey of stone crusher units and taken action against 24 defaulting units under section 31 A of Air (P&CP) Act, 1981& now, 19 nos. of the stone crushers have taken steps towards improvement of air pollution control system by providing dust suppression system, water sprinkling arrangement & metal road.</p> <p>All stone crusher units have installed water sprinkling system & covered the trucks during</p>	Complied

			transportation of raw & finished material.	
13	Installation of Online monitoring system to 13 nos. of highly polluting (17th Category) industries.	Industry MPCB	Total 11 units have installed online effluent monitoring system. CPCB has issued closure direction to 01 unit and 01 unit has reported, online monitoring system is not applicable as per CPCB guidelines.	Complied
14	Vehicle pollution and traffic management plan	NMMC RTO MIDC	<p>Regional Transport officer and local Body(Navi Mumbai Municipal Corporation) are being requested to give the point wise information about the time bound strategy to control the vehicular pollution and traffic management for :</p> <p>a) Phasing out of the old commercial vehicles say more than 15 years old, most of which are diesel driven</p> <p>b) Conversion of existing public transport buses/tempos/mini buses to CNG/PNG operated.</p> <p>c) Introduction of suitable public road-transport system.</p> <p>d) Diversion of non-destined traffic especially the trucks trough by pass roads.</p> <p>e) Construction of under – passes, fly-overs and widening of roads to control the traffic jams</p>	2 years
15	Reuse of Treated Sewage.	NMMC MPCB	<ul style="list-style-type: none"> • The raw sewage generated in NMMC area is 230.00 MLD. • Though the NMMC has 	Immediate + ongoing activity.

			<p>installed 7 sewage treatment plant (Total capacity of these Sewage Treatment Plants is to treat 434 MLD).</p> <ul style="list-style-type: none"> • STP's installed based on Cyclic Activated Sludge Technology (C-Tech) process. C-Tech Technology was found efficient to produce the excellent effluent quality which fulfills the effluent discharge standards & as well Water Recycling requirement for non-potable reusages. • Presently treated sewage and the treated effluent is being disposed into Vashi Creek and ultimately to Arabian Sea. • Land use pattern, Low lying area unsuitable for development. <p>Navi Mumbai Municipal Corporation, Thane-Belapur) Association is involved in CETP operation is being requested to explore and give the information on the Possibilities to enhance the reuse of treated sewage.</p>	
16	Air Quality Monitoring and Emission Source apportionment Study of Navi Mumbai City	NMMC / MPCB	MPCB issued Work Order to IIT (B), Mumbai and NERI. Work under progress.	1 year
17	Noise mapping of Navi Mumbai City	NMMC / MPCB	MPCB issued Work Order to NERI. Work under progress.	1 year

18	Awareness program	MPCB TBIA	Awareness programs are conducted regularly in coordination with TBIA, TTCWMA, CETP & other industries. MPC Board has also conducted awareness programs such as – World Environment day (5 June), World Ozone Day (22 Sep), Eco friendly Ganesh Festival, Vasundhara Awards, & Fire Cracker testing during Diwali.	Complied + Ongoing activity
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