

**The 132nd Meeting of State Level Expert Appraisal Committee - 1
held on 4th & 5th August, 2016 at Parishad Sabhagraha, Hall no. 2
& 3, 7th Floor, Main Building, Mantralaya, Mumbai- 400 032.**

The following members were present for the Committee meeting:

Shri. T. C. Benjamin	Chairman	4 th & 5 th August, 2016
Prof. (Dr.) Bhaskar N. Thorat	Member	4 th & 5 th August, 2016
Shri. Chandrakant I. Sambutwad	Member	4 th & 5 th August, 2016
Prof. (Dr.) Ramesh Dod	Member	4 th & 5 th August, 2016
Shri. D A Hiremath	Member	absent
Shri. Madan M. Kulkarni	Member	4 th & 5 th August, 2016
Shri. Balbir H. Sehgal	Member	4 th & 5 th August, 2016
Shri. M. B. Hajari	Member Secretary	5 th August, 2016

At the outset, the Chairman welcomed all Members present to the meeting. Thereafter the items were taken up for discussion.

*	Confirmation of minutes of 131st meeting
---	--

The minutes of the 131st SEAC-I meeting were **confirmed** unanimously.

Item no. 1	M/s. SEYA Industries Ltd. (ToR) Green field project for manufacturing of synthetic organic chemicals to the extent of 48000 MT/A at D-14, MIDC Tarapur, Boisar, District-Palghar.
-------------------	---

The Committee considered the project under 5 (f)-B1 category of EIA Notification 2006. The PP gave a detailed presentation for ToR for establishment of a greenfield project at plot no. D-14, MIDC Tarapur for manufacturing synthetic organic chemicals [Paracetamol 24000 MT/A and Acetic Anhydride 24000MT/A] totally amounting to 48000 MT/A.

The Committee noted that the PP had a project in the vicinity of the proposed project which had been functional since 1992-1993. The proposed project will rely on forward integration of this existing project (located on plot no. T-13 & T-14, MIDC Tarapur) which manufactures ONCB & TNCB. However, the PP submitted that the present project will not be sharing any infrastructure with the existing plant at plot no. T-13 & T-14.

After discussion, the Committee made the following observations:

1. The Committee observed that there were residential developments in the vicinity of the proposed project. The Committee was concerned about the adverse impact of the project, as manufacturing of Acetic Anhydride, which is hazardous in nature is envisaged. The EIA

report should contain details of residential developments in the vicinity and steps taken to protect these developments from potential hazards.

2. There were 3 accesses provided, 2 at the eastern side and 1 at the western side of the plot. A road may be proposed along the inner perimeter of the plant. Acetic Anhydride production plant may be relocated away from the residential developments to avoid civilian exposure to hazardous chemicals.
3. The PP shall take steps to conserve water by a) reusing effluents from ETP/STP and b) rain water harvesting. PP will require 2559 CMD of water; consent from MIDC for the same shall be furnished.
4. Considering the pollution potential of effluents and by-products, the EIA report should contain details of the nature of effluents and processes through which they are neutralized. In particular, Chloronitro Benzene and Paraamino Phenol should not be allowed to get mixed with the effluents.
5. Details of air pollution controlling system for 2 boilers shall be given to achieve a TPM level of less than 100 mg/Nm³.
6. Chemical wise storage requirement, mode of storage and location shall be given in the EIA report. Details of HAZOP studies shall be given, in particular, pertaining to the Ketene reaction. A separate chapter on Risk Assessment and Risk Mitigation shall be included in the EIA report. Details of material balance and atom efficiency at every stage may be provided.
7. Ambient Air Quality Studies for 8 stations shall be carried out, out of which 2 should be in residential area towards north of the plot.
8. 950CMD of treated effluents will be sent to the CETP. The existing CETP at Tarapur MIDC is saturated. **Therefore commissioning of the present project will be subject to the completion of new CETP (including outfall pipeline to be constructed by MIDC).**
9. The ToR shall be in accordance with the provisions contained in the Model ToR prescribed by MOEF&CC in April, 2015.

After considering all aspects of environmental impact, the Committee decided to **approve ToR** for preparation of EIA report subject to the consideration of points 1-9 above.

Item no. 2	M/s. Arkema Chemicals India Pvt. Ltd. Proposed expansion project for manufacture of resins amounting to a total of 2670 MT/Month at our existing plot no. D-43/1 & D-43/5, TTC MIDC Shiravane, Thane
-------------------	--

The Committee considered the project under 5 (f)-B1 category of EIA Notification 2006. The brief information of the project as submitted by the PP is as follows:

1	Name of project	Arkema Chemicals India Pvt. Ltd. D-43(1), D43(5), Trans Thane Creek, M.I.D.C., Indl. Area, Shirvane, Navi Mumbai-400706.
2	Name, address, e-mail & contact number of proponent	Mr. Prashant Sansare. Occupier. Arkema Chemicals India Pvt Ltd. D-43(1), D43(5), Trans Thane Creek, M.I.D.C., Indl. Area, Shirvane, Navi Mumbai-400706. Email. Prashant.sansare@arkema.com

3	Name of consultant	Name: M/s. Goldfinch Engineering Systems Pvt. Ltd.																						
4	Accreditation of consultant (NABET Accreditation)	S. No. 62 in QCI NABET List of 130, dated July 11, 2016 for the proposed project category (5f) of the MoEF EIA notification Schedule.																						
5	New project/expansion in existing project/modernization/diversification in existing project	Expansion																						
6	If expansion/diversification, whether environmental clearance has been obtained for existing project (If yes enclose a copy with compliance table)	NO.																						
7	Activity schedule in the EIA Notification	5 (f) B.																						
8	Area Details	Total plot area - 20123.44 SQM																						
9.	Name of the Notified Industrial Area/ MIDC area	TTC Industrial Area, Nerul																						
10.	TOR given by SEAC? (If yes then specify the meeting)	No																						
11.	Estimated capital cost of the project (Including cost for land, building, plant and machinery separately)	Additional cost 56.4 Cr																						
12.	Location details of the project:	Latitude: 19.049668 N Longitude: 73. 024367 E Location: Shiravane, MIDC Elevation above mean sea level meters: 12m (39.6 ft)																						
13.	Distance from protected areas/ critically polluted areas/ Eco Sensitive area/ inter- state boundaries	No such area in the vicinity.																						
14.	Raw materials (including process chemicals, catalysts & additives)	Pl. Refer Pre-feasibility Report.																						
15	Production Details																							
	<table border="1"> <thead> <tr> <th>Sr. No.</th> <th>Product</th> <th>Existing (MT/M)</th> <th>Proposed (MT/M)</th> <th>Total (MT/M)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Synthetic Resins such as: Acrylic Resin Polyamide Resin Polyester Resin Powder Resin Alkyd Resin Hard Resin</td> <td>1500</td> <td>-</td> <td>1500</td> </tr> <tr> <td>2</td> <td>Saturated powder polyester resins</td> <td>-</td> <td>1170</td> <td>1170</td> </tr> <tr> <td colspan="2">Total</td> <td>1500</td> <td>1170</td> <td>2670</td> </tr> </tbody> </table>	Sr. No.	Product	Existing (MT/M)	Proposed (MT/M)	Total (MT/M)	1	Synthetic Resins such as: Acrylic Resin Polyamide Resin Polyester Resin Powder Resin Alkyd Resin Hard Resin	1500	-	1500	2	Saturated powder polyester resins	-	1170	1170	Total		1500	1170	2670			
Sr. No.	Product	Existing (MT/M)	Proposed (MT/M)	Total (MT/M)																				
1	Synthetic Resins such as: Acrylic Resin Polyamide Resin Polyester Resin Powder Resin Alkyd Resin Hard Resin	1500	-	1500																				
2	Saturated powder polyester resins	-	1170	1170																				
Total		1500	1170	2670																				
16.	Process details / manufacturing details	Pl. Refer Pre-feasibility Report.																						
17	Rain water Harvesting (RWH)	Rain water harvesting will be implemented at the site																						
18.	Total Water Requirement	Please refer Table below:																						

	Particulars	Consumption (CMD)			Loss (CMD)			Effluent (CMD)		
	Water requirement	Existin g	Propose d	Tota l	Existin g	Propose d	Total	Existin g	Propose d	Total
	Domestic	11	-	11	2.5	-	2.5	8.5	-	8.5
	Industrial Process	5	15	20	1.0	4.21	5.71	3.5	10.79	14.29
	Cooling tower & Thermopack	72	137	209	57.5	133.29	190.79	14.5	3.71	18.21
	Gardening	10	-	10	10	-	10	-	-	-
	Total	98	152	250	71.5	137.5	209	26.5	14.5	41.0
	Fresh water requirement	--	--	250	--	--	--	--	--	--
19.	Storm water drainage		Natural water drainage pattern: Proper and separate storm water drains available, as per natural slope.							
20.	Sewage generation and treatment		Amt. of sewage generation (CMD): 8.5 Proposed treatment for the sewage: It will treat in combined ETP							
21.	Effluent Characteristics		Please refer Table below:							
	Sr. No.	Parameters	Unit	Inlet Effluent Characteristics		Outlet Effluent Characteristics		Effluent discharge standards (MPCB)		
	1	pH	--	6.3-7.4		7.0-8.0		6.0-8.5		
	2	Oil and Grease	mg/l	7-10		5-6		10.0		
	3	BOD	mg/l	3000-4000		60-80		100		
	4	COD	mg/l	8000-11000		200-240		250		
	5	Total Suspended Solid	mg/l	50-100		70-80		100		
	6	Total Dissolved Solids	mg/l	800-1000		800-1000		2100		
22.	ETP details					Amount of effluent generation (CMD): 41 CMD Capacity of the ETP: 50 CMD Amount of treated effluent recycled : -- Amount of water send to the CETP: 41 CMD Membership of CETP (if require): Yes				
23.	Note on ETP technology to be used					The treatment scheme involves Primary, Secondary and tertiary treatment. Treated water will be sent to CETP for further treatment.				
24.	Disposal of The ETP sludge					ETP sludge will be disposed to TTCWMA				
25.	Solid Waste Management					Please refer Table Below:				
Non-Hazardous waste: There will be no addition to non-hazardous waste.										

	Hazardous Waste:							
	Sr. No.	Description	Cat	UOM	Existing	Proposed	Total	Method of Disposal
	1	Spent Solvent	28.5	MT/M	-	7	7	Authorised Recycler
	2	ETP Sludge	34.3	MT/M	0.6	5.0	5.6	CHWTSDF
	5	Waste/ Residue (not made with vegetable or animal mate)	23.1	MT/M	0.02	0.5	0.52	CHWTSDF
	6	Spent Oil	5.1	Lit/M	40	50	90	Authorised Recycler
	7	Wastes and Residues	21.1	MT/M	4	6	10	CHWTSDF

26.	Stacks emission Details				Refer Table Below:			
	section & units	Fuel Used with Quantity	Stack No.	Height from ground level (m)	Internal diameter (m)	Temp. of Exhaust Gases		
	Thermopack (10 lkcal/h)	PNG (2350 SCMD)	1	32	0.6	166° C		
	Thermopack (15 lkcal/h)	PNG (2350 SCMD)	1	30	0.6	188° C		
	Thermopack (20 lkcal/h) Proposed	PNG (5540 SCMD) / FO (5.2 TPD)	1	35	1	180° C		
	DG Set (380 KVA)	HSD (50 lit/hr)	1	4.3 Above enclosure	0.14	172° C		
	DG Set (250 KVA)	HSD (50 lit/hr)	1	4.3 Above enclosure	0.14	246° C		
	Replaced by							
	DG Set (380 KVA) Proposed	HSD (80 lit/hr)	1	4.0 Above enclosure	0.14	175° C		
Scrubber (Glycol)	-	1	4.3	0.03	-			

27.	Details of Fuel to be used:				Sr. No	Type of Fuel	Existing	Proposed	Total
-----	-----------------------------	--	--	--	--------	--------------	----------	----------	-------

		<table><tr><td>1</td><td>PNG</td><td>4700 SCMD</td><td>5540 SCMD</td><td>10240 SCMD</td></tr><tr><td>2</td><td>FO</td><td>-</td><td>5.2 TPD</td><td>5.2 TPD</td></tr><tr><td>3</td><td>HSD</td><td>100 Lit/hr</td><td>80 Lit/hr</td><td>180 Lit/hr</td></tr></table> <p>Source of Fuel : From market/ out sider fuel companies Mode of Transportation of fuel to site : By Road</p>	1	PNG	4700 SCMD	5540 SCMD	10240 SCMD	2	FO	-	5.2 TPD	5.2 TPD	3	HSD	100 Lit/hr	80 Lit/hr	180 Lit/hr					
1	PNG	4700 SCMD	5540 SCMD	10240 SCMD																		
2	FO	-	5.2 TPD	5.2 TPD																		
3	HSD	100 Lit/hr	80 Lit/hr	180 Lit/hr																		
28.	Energy	<p>Power Supply : Existing Power requirement : 679 KW Proposed power requirement : 700 KW</p> <p>DG sets: Number and capacity DG sets to be used (Existing and proposed) Existing : 380 KVA and 250 KVA DG sets Proposed: 250 KVA DG set will be replaced by new 380 KVA DG Set</p>																				
29.	Green Belt Development	<p>Green belt area: 3050 SQM (Existing 1300 SQM + Proposed 1750 SQM) Number of species of trees & shrubs to be planted: Existing 200+ Proposed 150 Number, size, age and species of trees to be cut, trees to be transplanted: NA</p>																				
30.	Details of pollution control Systems:	<table><tr><td>Sr. No.</td><td>Source</td><td>Existing pollution control system</td><td>Proposed to be installed</td></tr><tr><td>1</td><td>Air</td><td>By dispersal into atmosphere through chimney of adequate/ recommended height.</td><td>By dispersal into atmosphere through chimney of adequate/ recommended height.</td></tr><tr><td>2</td><td>Water</td><td>ETP consisting of Primary, Secondary and Tertiary treatment only.</td><td>Upgraded ETP consisting of Primary, secondary and tertiary treatment. Treated effluent will be sent to CETP.</td></tr><tr><td>3</td><td>Noise</td><td>PPE & Acoustic enclosure for existing DG sets.</td><td>Acoustic enclosure for proposed D.G of 380 KVA & PPE</td></tr><tr><td>4</td><td>Solid Waste</td><td>Hazardous waste is being disposed to CHWTSDF</td><td>Hazardous waste will be disposed to CHWTSDF There is no increment in Non-hazardous waste</td></tr></table>	Sr. No.	Source	Existing pollution control system	Proposed to be installed	1	Air	By dispersal into atmosphere through chimney of adequate/ recommended height.	By dispersal into atmosphere through chimney of adequate/ recommended height.	2	Water	ETP consisting of Primary, Secondary and Tertiary treatment only.	Upgraded ETP consisting of Primary, secondary and tertiary treatment. Treated effluent will be sent to CETP.	3	Noise	PPE & Acoustic enclosure for existing DG sets.	Acoustic enclosure for proposed D.G of 380 KVA & PPE	4	Solid Waste	Hazardous waste is being disposed to CHWTSDF	Hazardous waste will be disposed to CHWTSDF There is no increment in Non-hazardous waste
Sr. No.	Source	Existing pollution control system	Proposed to be installed																			
1	Air	By dispersal into atmosphere through chimney of adequate/ recommended height.	By dispersal into atmosphere through chimney of adequate/ recommended height.																			
2	Water	ETP consisting of Primary, Secondary and Tertiary treatment only.	Upgraded ETP consisting of Primary, secondary and tertiary treatment. Treated effluent will be sent to CETP.																			
3	Noise	PPE & Acoustic enclosure for existing DG sets.	Acoustic enclosure for proposed D.G of 380 KVA & PPE																			
4	Solid Waste	Hazardous waste is being disposed to CHWTSDF	Hazardous waste will be disposed to CHWTSDF There is no increment in Non-hazardous waste																			
31.	Environmental Management plan Budgetary Allocation	<p>Capital cost (with break up): 56.4 Cr O&M cost (with break up):</p>																				

		Sr. No.		Recurring Cost per Annum (In Lakhs)	Capital Cost (In Lakhs)
		1	Air Pollution Control	10.0	30
		2	Water Pollution Control	10.3	125
		3	Noise Pollution Control	5	10
		4	Environment Monitoring and Management	1.8	-
		5	Occupational Health	2.1	15
		6	Green Belt	0.5	1.5
		7	Solid waste management	2	-
		8	Rain Water Harvesting	-	5.5
			CSR	1	-
		Total		32.7	187.0
32	EIA submitted (If yes then submit the salient features)	EIA is submitted. Proposed project is environmentally sound proposal within built control and mitigation measures not likely to have any significant adverse impact on the environment.			

33.Storage of chemicals (inflammable/ explosive/hazardous/toxic substances)

Sr. No.	Description	Status	Location	Storage Capacity in MT	Maximum Quantity of Storage at any point of time in MT	Consumption / Month in MT	Source of Supply	Means of transportation
1	Phosphoric Acid	Liquid	R.M. Godown no.1	0.2	0.2	0.07	Local	Road
2	Glycerophosphoric Acid	Liquid	R.M. Godown no.1	0.2	0.2	0.06	Local	Road
3	Benzoic Acid	Solid	R.M. Godown no.1	10	10	5	Local	Road
4	Adipic Acid	Solid	R.M. Godown no.1 & 3	55	55	35	Local / Import	Road / Sea
5	Itaconic Acid	Solid	R.M. Godown no.1	1	1	0.1	Local	Road
6	Isophthalic Acid	Solid	R.M. Godown no.1	55	55	44	Local / Import	Road / Sea
7	Pure Terephthalic Acid	Solid	R.M. Godown no.1 & 3	20	20	19	Local	Road
8	TPP (Triphenyl Phosphite)	Liquid	R.M.	0.3	0.3	0.07	Local	Road

		d	Godown no.1					
9	Triethylene Tetramine (Teta)	Liquid	R.M. Godown no.5	16	16	32	Local / Import	Road / Sea
10	TEPA	Liquid	R.M. Godown no.5	8	8	2	Import	Road / Sea
11	Trimellitic Anhydride	Solid	R.M. Godown no.1	1	1	0.15	Local	Road
12	Phthalic Anhydride	Solid	R.M. Godown no.1 & 3	60	60	103	Local / Import	Road / Sea
13	Maleic Anhydride	Solid	R.M. Godown no.1	5	5	0.1	Local	Road
14	Fascat4100	Solid	R.M. Godown no.1	0.2	0.2	0.1	Local	Road
15	Calcium Octoate	Liquid	R.M. Godown no.1	0.1	0.1	0.02	Local	Road
16	Zinc Octoate 6%	Liquid	R.M. Godown no.1	0.1	0.1	0.01	Local	Road
17	Lithium Hydroxide	Solid	R.M. Godown no.1	0.1	0.1	0.05	Local	Road
18	Epoxy Resingy-250	Liquid	R.M. Godown no 2	1.5	1.5	0.6	Local	Road
19	Soya Fatty Acid	Liquid	Tank	40	32	40	Local	Road
20	Unfatic Acid	Liquid	R.M. Godown no 5	5	5	2.5	Local	Road
21	Dimer Acid	Liquid	Tank & Godown no.5	60	55	65	Local / Import	Road / Sea
22	Cardura E-10	Liquid	R.M. Godown no.4	2	2	3	Local	Road
23	Lauric Acid 99%	Powder	R.M. Godown no.1	10	10	1	Local	Road
24	NPG	Solid	R.M. Godown no.3 & 6	70	70	86	Local / Import	Road / Sea
25	Glycerine	Liquid	R.M. Godown no.5	15	15	19	Local	Road
26	Monoethylene Glycol	Liquid	Tank	18	14	8	Local	Road
27	Diethylene Glycol	Liquid	Tank	18	14	12	Local	Road
28	M P Diol Glycol	Solid	R.M. Godown no.1	1	1	0.3	Local	Road
29	Penta Erythritol	Solid	R.M. Godown no.3 & 6	20	20	14	Local / Import	Road / Sea
30	TMP	Solid	R.M. Godown	2	2	0.4	Local	Road

			no.6					
31	Normal Dodecyl Mercaptan	Liquid	R.M. Godown no.2	1	1	0.1	Local	Road
32	Tertiary Dodecyl Mercaptan	Liquid	R.M. Godown no.2	1	1	0.2	Local	Road
33	Acrylic Acid	Liquid	R.M. Godown no.2	2	2	1.5	Local	Road
34	Hydroxy Ethyl Methacrylate	Liquid	R.M. Godown no.2	16	16	5.5	Local / Import	Road / Sea
35	2-Hydroxyl Ethyl Acrylate	Liquid	R.M. Godown no.2	16	16	10	Local / Import	Road / Sea
36	N-Butyl Mehtacrylate	Liquid	R.M. Godown no.2	16	16	6	Import	Road / Sea
37	Ethyl Hexyl Acrylate	Liquid	R.M. Godown no.2	5	5	2	Local	Road
38	Hydroxypropyl Methacrylate	Liquid	R.M. Godown no.2	16	16	10	Local / Import	Road / Sea
39	MMA	Liquid	Tank & R.M. Godown no.2	20	17	15	Local	Road
40	Styrene Monomer	Liquid	Tank & R.M. Godown no.2	20	17	48	Local	Road
41	2-Hydroxy Propyl Acrylate	Liquid	R.M. Godown no.2	2	2	0.5	Local	Road
42	Butyl Acrylate	Liquid	Tank & R.M. Godown no.2	16	16	30	Local	Road
43	Methacrylic Acid	Liquid	R.M. Godown no.2	2	2	0.5	Local	Road
44	Caustic Soda	Solid	R.M. Godown no.1	2	2	0.3	Local	Road
45	DTAP	Liquid	Peroxide room / A/C Stores	1.2	1.2	0.5	Local	Road
46	Tertiary Butly Perbenzoate	Liquid	Peroxide room / A/C Stores	1.2	1.2	0.7	Local	Road
47	DTBP	Liquid	Peroxide room / A/C Stores	1.5	1.5	2	Local	Road
48	MEKP	Liquid	Peroxide room / A/C Stores	0.1	0.1	0.01	Local	Road
49	Di Butyl Tin Dilaurate	Liquid	Peroxide room / A/C Stores	0.1	0.1	0.01	Local	Road

50	Distilled Aromax	Liquid	R.M. Godown No. 4	5	5	2	Local	Road
51	Mineral Turpentine	Liquid	Tank & R.M. Godown no.4	40	32	25	Local	Road
52	Mixed Xylene	Liquid	Tank & R.M. Godown no.4	80	66	70	Local	Road
53	Mixed Xylene (Paint Grade)	Liquid	R.M. Godown No. 4	5	5	6.5	Local	Road
54	Methoxy Propyl Acetate	Liquid	R.M. Godown No. 4	2	2	0.7	Local	Road
55	CIX Solvent	Liquid	Tank & R.M. Godown no.4	60	52	105	Local	Road
56	Industrial Solvent Mcee-Ten(A)	Liquid	Tank & R.M. Godown no.4	40	33	55	Local	Road
57	Butyl Cellosolve	Liquid	Tank & Godown no.4	30	24	35	Local	Road
58	Ethoxy Ethyl Propionate	Liquid	R.M. Godown No. 4	2	2	0.3	Local	Road
59	Butyl Acetate	Liquid	R.M. Godown No. 4	10	10	3.5	Local	Road
60	Normal Butanol	Liquid	R.M. Godown No. 4	10	10	3.5	Local	Road
61	Isopropyl Alcohol	Liquid	R.M. Godown No. 4	1	1	0.2	Local	Road
62	MIBK	Liquid	R.M. Godown No. 4	1	1	0.1	Local	Road
63	Cellosolve Acetate	Liquid	R.M. Godown No. 4	9	9	7	Local	Road
64	Toluene Di Isocyanate	Liquid	Isolated Godown in R.M. Godown no.1	2	2	2	Local	Road
66	Ethylene Glycol	Solid	Tank	18 KL	15 KL	35	Local	Road
67	Neopentyl Glycol	Solid	Godown No. 01	50 MT	50 MT	116	Local / Import	Road / Sea
68	Neopentyl Glycol 90%	Liquid	Tank	60 KI	50 KL	408	Local / Import	Road / Sea
69	Terphthalic Acid	Solid	Godown No. 01	100 Mt	100 MT	618	Local	Road
70	Adipic Acid	Solid	Godown No. 01	10 MT	10 MT	47	Local / Import	Road / Sea
71	Isophthalic Acid	Solid	Godown No. 01	20 MT	20 MT	175	Local / Import	Road / Sea

The PP gave a detailed presentation of EIA Report pertaining to the proposed expansion of the project by adding 1170 MT/M of powder resin with 0% solvent content to existing production of 1500 MT/M solvent borne liquid resins. The process will remain the same except for the addition of flaking operation.

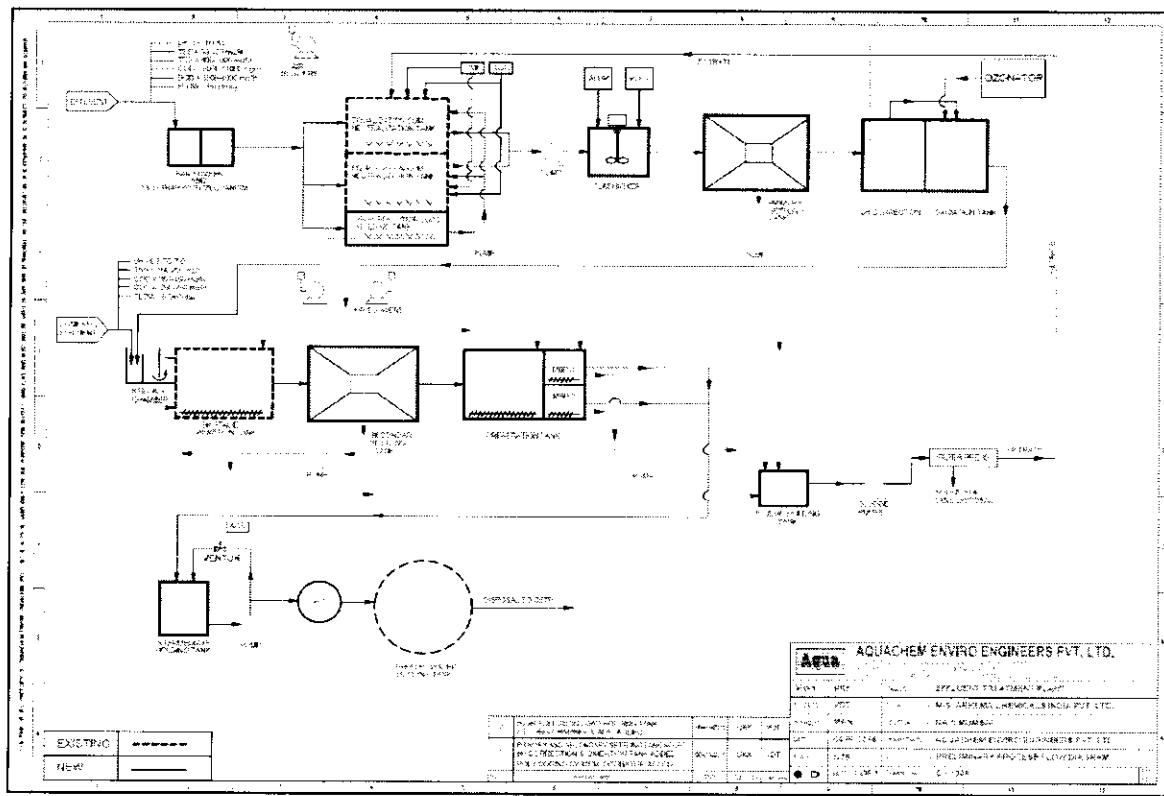
After discussion the Committee made the following observations:

1. The project involves 250 CMD of fresh water which will be provided by TTC MIDC Shiravane [existing 98 CMD + proposed 152 CMD]. The effluent treatment process is given in **Annexure 2.1** and features an ETP of capacity 50CMD consisting of Primary, Secondary and Tertiary treatments. The ETP will treat 41.5 CMD of trade and domestic waste water and after treatment the same quantum will be sent to the CETP. The Committee was given to understand that the CETP at TTC MIDC Shiravane **has additional capacity to accept the hydraulic load.**
2. The effluent treatment also features Membrane Bioreactor to be provided by Aquachem. **The operation of membrane bio-reactor should be the responsibility of PP** and Aquachem should transfer the technology for operating the Membrane bioreactor to the PP. Dioxene formed in the process should be separately treated in scrubber to convert it into bio-degradable compound before leading the effluent into the ETP. The PP shall facilitate online monitoring of hydrocarbon at the vent of the scrubber.
3. The PP has 2 existing thermopacks of 10 lakh kcal/hr and 15 lakh kcal/hr with stack heights of 30m & 32m respectively. Both use PNG as fuel. The PP proposes a third thermopack of 20 lakh kcal/hr with stack height of 35m using PNG (FO when PNG is not available). Stack height calculations were verified. TPM of less than 100 mg/Nm³ shall be achieved at the stack end.
4. The detailed analysis of Risk Assessment and Risk Mitigation studies were carried out, which indicates that there will not be any off-site emergency. Mitigation measures are depicted in **Annexure 2.2**. Necessary training shall be given to employees and necessary guidelines should be displayed wherever required. Salient features of MSDS may also be displayed at appropriate locations.

The Committee went through the all aspects of Environmental Impact and noted that the baseline studies indicated that air, water, ground water, noise and soil parameters would remain well within prescribed limits even after commissioning of the project. The Committee therefore decided to **recommend** the project for EC subject to the observations (1-4) above.

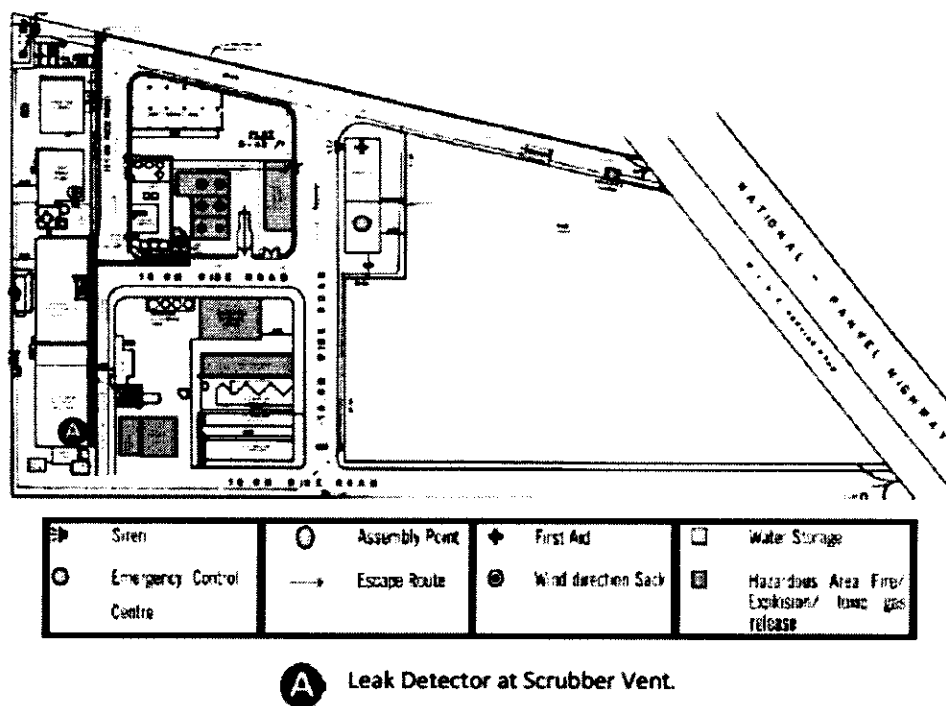
"Annexure 2.1"

Effluent Treatment Process



Annexure 2.2

1. Provide dyke for accidental spill containment for above ground storage tanks.
2. Provide mobile pump arrangement to transfer the accidental spill contained in dyke to emergency spare tank.
3. Store chemicals considering the compatibility and reactivity hazards at store/ warehouse.
4. Prepare Safe Operating Procedure (SOP) for handling of polymerizable (monomers) chemicals.
5. Provide process interlocks/ shutdown systems in case of control failure.
6. Provide fire water storage of 165 m³.
7. Fire hydrant system.
8. Provide leak detector at vent of the scrubber with signal at Emergency Control Centre.
9. Provide wind direction socks.
10. Provide suitable arrangement at storm drain to avoid any organic contaminated water/ spill/ fire water going out of the site.
11. Revise "DMP" based on MCLS Analysis for the site with dove tailing data for off-site disaster control plan.



Item no. 3	Minor Mineral (stone) Latur (1) [119th compliance]
-------------------	--

The proposal was considered under category 1(a)-B2 of the schedule of EIA Notification 2006. The brief information submitted by the PP and decision of the Committee are depicted below:

S. No.	Name of the Proponent, Mouz, Taluka, Land type	Gat No./ Survey No.	Area (ha)	Observation of the Committee	Recommendations
1.	Shri. Sharan kumar Chavanda Algarwadi, Chakur	11/3	1.00 Ha	The proposal was previously considered in 114 th & 119 th meetings. The DMO has confirmed that road was beyond 200m of the proposed quarry. No hill cutting was involved. The AAQS indicated that GLCs were within limits (with the crusher in operation). All aspects of environmental impact were considered and found to be within limits.	Recommended for EC subject to the conditions stipulated in the Annexure A .

Item no. 4	Minor Minerals (stone) Thane (01)
-------------------	--

The proposal was considered under category 1(a)-B2 of the schedule of EIA Notification 2006. The brief information submitted by the PP and decision of the Committee are depicted below:

S. N o.	Name of the Proponent, Mouz, Taluka, Land type	Gat No./ Survey No.	Area (ha)	Observation of the Committee	Recommendations
1.	Ashtavinayak stone crusher Khandval, Bhiwandi	3/9/11/1,3/8/5+9/8/1,3/7k+8/3/1,3/7k+8/2/1,3/6k+7/3/1,3/7B+8/1/1	3.85 ha	The proposal was considered in the 101 st & 131 st meetings. Approved Mining Plan has been submitted and site inspection report of DMO has also been submitted. It was seen from the site inspection report that there were no habitations, water bodies, roads & public structures within 200m of proposed mine. However, quarry appears to be in hilly area. A certificate from Senior	Deferred for certificate from Senior Geologist, GSDA regarding the geo-hydrological regime of the area where proposed quarry is situated.

				Geologist, GSDA stating that the quarry lies in run-off zone/recharge zone/storage zone shall be submitted. AAQS indicates that GLCs were within limits with the crusher in operation.	
--	--	--	--	--	--

Item no. 5	Minor Minerals (stone) Ahmednagar (01)
-------------------	---

PP remained absent hence **deferred**.

Item no. 6	Proposed development works of Road Projects in Mira Bhayander Municipal Corporation area by MBMC
-------------------	---

The Committee noted the contents of Circular dated 31/12/2015 issued by the Additional Chief Secretary, Environment and Member Secretary, SEIAA. In the said Circular, the SEAC has been requested to consider cases referred it by SEIAA for detailed scrutiny and re-appraisal. It is also mentioned that these cases had been recommended by MCZMA directly to SEIAA by virtue of CRZ Notification (amended) dated 28th November, 2014 and pertain to following category of projects:

1. Building projects in CRZ II areas and construction involving more than 20, 000 sq. m built up area.
2. Projects listed in para 4(i) of CRZ Notification, 2011 such as construction and operation for ports, harbours, jetties, wharves, quays, slipway, ship construction yards, breakwaters, groynes, erosion control measures etc.
3. Projects not attracting EIA Notification 2006 (projects not listed in EIA Notification, 2006).

The PP gave a detailed presentation of 5 number of road construction projects in MBMC area:

- 1. Improvement / construction of 18m / 30m wide DP road from Jesal Park to Ghod Bunder Bhayander (E) in MBMC area.**

Project Location	Village Navghar Survey Nos. 209(Old), 60, 61, 57, 228, 51, 230 Bhayander Choupaty New Survey 74, 75, 76, 77, 81, 82, 83, 84, 66, 67, 52, 53, 41, 48, 39, 36, 35, 32, 24, 25, 26, 20, 17, 18, 11, 12, 9.80, 79, 15, 69, 70, 38(Total area – 855102.465 Sq.mtr.) part MaujeNavghar	
CRZ Details	CRZ area classification	Length falling in CRZ category
	CRZ I(i)/buffer zone	48 m./1058m (Road on stilt)
	CRZ I(ii)	615 m (Road on stilt)

	CRZ II	758 m
	CRZ III	1323 m
Zoning Remarks	The land under reference falls in Public / Semi-Public category	
Area Details	Area under proposal: 111657.0366 Sqm Area on road on stilt: 1440 Sqm.	

2. Construction of 30m wide DP road from Bhaindar (W) Rly. Station to Subhash Chandra Bose Maidan in MBMC area.

Project Location	Survey Nos. 753(340), 754(338), 764(378), 755(337), 773, 722(342)		
CRZ Details	CRZ area classification	Length falling in CRZ (m)	
	CRZ I(i) / Buffer zone	209 / 875 (Road on stilt)	
	CRZ I(ii)	790 (Road on stilt)	
	CRZ II	-	
	CRZ III	484	
Zoning Remarks	The land under reference falls in Public / Semi-Public category		
Area Details	Area under proposal: 61200 Sqm Area of Road on stilt: 6300 Sqm.		

3. Construction of 18/30m wide DP road passing behind Subhashchandra Bose maidan up to Morwa, Bhaindar (W).

Project Location	Survey Nos. 757(230), 337(755), 17(170), 18(171), 722A(1B), 116(3), 115(264), 103(240), 1(1), 2(2), 99(238), 95(267), 10(228), 9(225), 127(226), 8(224), 128(227), 96(209), 31(215), 7(205), 99(207), 100(192), 101(194), 6(193), 9(185), 86(103), 105, 106(259), 106(187), 59(278)	
CRZ Details	CRZ area classification	Length falling in CRZ category(m)
	CRZ I(i)/mangroves buffer zone	60 m / 50 m. (Road on stilt)
	CRZ I(ii)	296 m. (Road on stilt)
	CRZ II	653 m
	CRZ III	2983 m.
Zoning Remarks	The land under reference falls in Public / Semi-Public category	
Area Details	Area under proposal: 75600 Sqm. Area of road on stilt: 1800 Sqm.	

4. Construction of remaining 30m wide road parallel to railway line towards Naya Nagar Mira Rd. (E). (Mira Road cheda compound road to Mira Road station, East).

Project Location	Survey Nos. 45(549), 47, 48 (522), 56(521), 57(520), 58(519), 59(518), 76(517)		
CRZ Details	CRZ area classification	Length of road falling in CRZ category	
	CRZ I(i) / Buffer zone	---	
	CRZ I(ii)	--	
	CRZ II	257 M	
	CRZ III	309 M	
Zoning Remarks	The land under reference falls in Public / Semi-Public category		
Area Details	Area under proposal = 13038 Sqm.		

5. Construction of 30m wide Dahisar link road in MBMC area.

Proposal Details	Construction of 30m wide Dahisar link road in MBMC area		
Project Location	166, 167(602), 163(604), 162(605), 161(606), 144(607), 142(609B), 138, 23(262), 21(141), 35, 36, 50, 52, 55, 58, 69, 74, 75, 76, 78, 106, 229		
CRZ Details	CRZ area classification	Length falling in CRZ category	
	CRZ I(i) / Buffer zone	1793.9 /230 (road on stilt)	
	CRZ I(ii)	798.97 (Road on stilt)	
	CRZ II	230.49	
	CRZ III	688.74	
Zoning Remarks	The land under reference falls in Public / Semi-Public category		
Area Details	Area under proposal- 167250 Sqm Area of road on stilt- 58221 Sqm.		

The MCZMA has already appraised the project from CRZ point of view and has duly recommended it to the SEIAA. The Committee noted the minutes of MCZMA.

In the 118th meeting the Committee had sought the compliances on 8 issues. The compliances submitted by the PP are as follows:

Sr. no.	Compliance sought	Compliance submitted
1.	All the roads are meant to reduce congestion in the city and afford a comfortable Level of Service to the	The PP has arrived at the Combined PCUs based on the projected traffic flows arrived at by taking into

	commuters. How this will be achieved can only be assessed from a proper study of projected traffic flow, which the PP contends to have been carried out through the City Mobility Plan. The Committee desired to familiarize itself with the said City Mobility Plan as far as these 5 roads were concerned.	consideration the catchment area, FSI/TDR loadings, projected population, working population, trips by vehicles, no. of daily vehicles & PCUs as per CTS report and IRC standards and total transfer in peak hour PCUs with consideration of induced traffic and connected/diverted traffic. Traffic projection seem to have been made on rational basis.
2.	The Committee desired that all roads should be concretized and not asphalted as concretized roads are more durable and requires less maintenance. Further in coastal areas, concretized roads will suffer less settlement and therefore are less amenable for damages and water stagnation.	Proposed roads are to be concretized with the provision of utilities. The Committee however desired that the cycle track may be thought of only if there is a networking of such tracks throughout the city.
3.	Details of debris management may be given ensuring that the debris generated is not haphazardly disposed of.	The road work will generate 62,000 m ³ of debris which will be used by MBMC for capping the dumping ground at Uttan.
4.	The sourcing of earth for embankment need to be detailed. PP mentioned that a part of filling required for embankment would be sourced from the existing dumping ground. The other sources and their feasibility may be outlined.	The earth will be sourced from the excavation of road work only.
5.	The MCZMA have sought additional information regarding flora, fauna and other biodiversity features around the project no.5. This may be furnished.	Biodiversity report of proposed road has been submitted. [Annexure 6.1]
6.	The Ambient Air Quality Studies seem to have been carried out during the rainy season which is not acceptable. Similarly AAQ study should indicate PM ₁₀ & PM _{2.5} levels, whereas the study indicates RSPM & SPM which are outdated parameters. The data seems to have been copied from MBMC ESR (2013-14). At least one month study of Ambient Air Quality for non-monsoon season will be required.	Ambient Air Quality Studies has been carried out in fair seasons for 6 stations and GLCs expressed in terms of PM ₁₀ / PM _{2.5} were within prescribed limits.
7.	Dahisar link road (project no. 5) appears to be kinked at 90° at four locations, which is not desirable from the point of view of smooth traffic flow. An alignment which is as per the IRC Standards for curves may be prescribed so that traffic bottlenecks and accidents can be avoided.	A new alignment has been proposed without any sharp turns. This will have to be approved by MCZMA.
8.	The PP may indicate the kind of developments which will be allowed as per the DP or DCR along the proposed corridors. The Committee would like to know whether the TDR generated will be loaded along	The development along the corridor will be as per the prevailing DP/DCRs.

the corridors.

The Committee considered the above compliances and concluded that they could be accepted. [Point no. 7: the prior approval of MCZMA will be required.]

After considering all aspects of environmental impact the Committee decided to **recommend the projects to SEIAA.**

Item no. 7	M/s. KUKADI SAHAKARI SAKHAR KARKHANA LTD. (ToR) Sugar 5500 TCD & 27 MW Cogeneration unit at Gut No. 91 & 92, Pimpalgaon Pisa, Tal. Shrigonda, Dist. Ahmednagar
-------------------	---

The PP gave a detailed presentation for ToR for capacity enhancement of sugar unit from 3500 TCD to 5500 TCD and co-generation unit from 12 MW to 27 MW. The Committee considered the projects under 5(j)-B1 [for sugar unit] and 1(d)-B1 [for co-gen plant] category of EIA Notification 2006.

After detailed discussion, the Committee made the following observations:

1. The EIA report should explain how additional cane generation will be achieved without any increase in water requirement for irrigation by popularizing drip irrigation. EIA report should also detail how augmentation of capacity will be achieved without any increase in water requirement for the processes.
2. Detailed bagasse calculation should be given to prove that bagasse generated is sufficient as against bagasse required for the co-generation so that it will not be outsourced from any other sources. Under no circumstance shall any fuel other than bagasse generated in the plant be used.
3. ETP upgradation will be required, considering only one ETP outlet. Spray pond water should be led to ETP for treatment. The plant will run as a Zero Liquid Discharge Process.
4. Separate chapter on safety and fire protection shall be included in the EIA report.
5. Molasses, ash & bagasse management shall be detailed. Air pollution devices and stack height shall be worked out to achieve an outlet TPM of less than 50 mg/Nm³.
6. The ToR shall be in accordance with the provisions contained in the Model ToR prescribed by MOEF&CC in April, 2015.

After considering all aspects of environmental impact, the Committee decided to **approve ToR** for preparation of EIA report subject to the consideration of points 1-6 above.

Item no. 8	M/s. Ramdev Chemicals Pvt Ltd. Proposed project for Expansion of "Active Pharmaceutical Ingredients & Intermediate Products" at E-41/129,MIDC,Tarapur,Boisar, Thane
-------------------	---

The brief information of the PP is submitted as follows:

1.	Name of Project:	Proposed Expansion Project For Manufacturing of "Active Pharmaceutical Ingredients, Intermediate Products & Fine Chemicals" by M/s. Ramdev Chemicals Pvt Ltd at Plot No. : E-41 & E-129, MIDC- Tarapur, Village: Kolawade, Boisar, Taluka: Palghar, District: Thane, Maharashtra.																					
2.	Name, Address & Contact No. of Proponent	Mr. S. S. Champaneri –Managing Director M/s. Ramdev Chemicals Pvt. Ltd., E-5, 3rd floor, Nemikrishna CHS., Jethwa Nagar, V.L. Road, Kandivali (W), Mumbai – 400 067. Tel : 28011757																					
3.	Name of Consultant	Enviro Analysts and Engineers Private Limited.																					
4.	Accreditation of Consultant(NABET Accreditation)	NABET Accreditation																					
5.	New Project/ Expansion in existing project/ diversification in exiting project	Expansion in Existing Product and addition of new product.																					
6.	If expansion/ Diversification, Whether environmental clearance has been obtained for existing project (If yes, enclose a copy with compliance table)	No																					
7.	Activity Scheduled in the EIA Notification	Schedule 5 (f) ,Project Category -B																					
8.	Area Details	Plot area: 12060 m ² Green Belt Area : 3983 m ² (33% of the Total Plot Area)																					
9.	Name of the Notified Industrial area/ MIDC area	MIDC, Tarapur.																					
10.	ToR given by SEAC? (if yes then specify the meeting)	Yes. ToR has been granted on the 82 nd Meeting of State Level Expert Appraisal Committee-I (Item No.21) held on 3 rd to 5 th July, 2014. EIA presented in 102 th SEAC Meeting (Item No. 18) held on 15 th -16 th May 2015 Compliance of 102 th SEAC-I meeting Presented in 115 th SEAC-I Item No 28.																					
11.	Estimated cost of the project : (Pl quote estimation clearly specifying cost for land, building, plant and machinery separately)	Rs. 10.95 Cr. <table border="1"> <thead> <tr> <th>Sr. No.</th><th>Description</th><th>Capital Cost (Rs. Crores)</th></tr> </thead> <tbody> <tr> <td></td><td>Land Cost</td><td>1.65</td></tr> <tr> <td></td><td>Civil / Building Renovation Cost</td><td>2.5</td></tr> <tr> <td></td><td>Plant Equipment Cost</td><td>2.5</td></tr> <tr> <td></td><td>Utility Equipment Cost</td><td>1.25</td></tr> <tr> <td></td><td>Hardware Cost</td><td>0.25</td></tr> <tr> <td></td><td>Electrical</td><td>0.50</td></tr> </tbody> </table>	Sr. No.	Description	Capital Cost (Rs. Crores)		Land Cost	1.65		Civil / Building Renovation Cost	2.5		Plant Equipment Cost	2.5		Utility Equipment Cost	1.25		Hardware Cost	0.25		Electrical	0.50
Sr. No.	Description	Capital Cost (Rs. Crores)																					
	Land Cost	1.65																					
	Civil / Building Renovation Cost	2.5																					
	Plant Equipment Cost	2.5																					
	Utility Equipment Cost	1.25																					
	Hardware Cost	0.25																					
	Electrical	0.50																					

		<table> <tr> <td></td><td>Safety & Fire Hydrant</td><td>0.60</td></tr> <tr> <td></td><td>Q.C. Equipment</td><td>0.35</td></tr> <tr> <td></td><td>ETP & STP</td><td>1.25</td></tr> <tr> <td></td><td>Miscellaneous (2%)</td><td>0.10</td></tr> <tr> <td></td><td>Grand Total</td><td>10.95</td></tr> </table>		Safety & Fire Hydrant	0.60		Q.C. Equipment	0.35		ETP & STP	1.25		Miscellaneous (2%)	0.10		Grand Total	10.95																																																																													
	Safety & Fire Hydrant	0.60																																																																																												
	Q.C. Equipment	0.35																																																																																												
	ETP & STP	1.25																																																																																												
	Miscellaneous (2%)	0.10																																																																																												
	Grand Total	10.95																																																																																												
12.	Location details of the project :	Latitude : 19°48'22.91"N Longitude : 72°43'53.49"E Location: Plot No. : E-41 & E-129, MIDC- Tarapur, Village: Kolawade, Boisar, Taluka: Palghar, District: Thane, Maharashtra. Elevation above Mean Sea Level (meters) : 15 m above Mean Sea Level																																																																																												
13.	Distance from protected areas/Critically polluted area/Eco sensitive areas/Inter State boundaries	NA																																																																																												
14.	Production Details	<table> <tr> <th>Sr. No</th><th>Name of the product</th><th>Total Production (MT/M)</th></tr> <tr><td></td><td>Intermediate – A</td><td rowspan="44">153.8</td></tr> <tr><td></td><td>2-Amino pyridine</td></tr> <tr><td></td><td>Other Bulk Drugs</td></tr> <tr><td></td><td>Sodium Valproate BP/IP/USP</td></tr> <tr><td></td><td>Salbutamol Sulphate BP/IP/USP</td></tr> <tr><td></td><td>Phenyl Propanolamine HCl</td></tr> <tr><td></td><td>Cetirizine Di HCl EP/BP/IP</td></tr> <tr><td></td><td>Premaquine Phosphate IP/BP</td></tr> <tr><td></td><td>Benzocaine I.P.</td></tr> <tr><td></td><td>Nitro Methane</td></tr> <tr><td></td><td>Prioxicam USP</td></tr> <tr><td></td><td>Enalaprilmateate EP/BP/USP</td></tr> <tr><td></td><td>Mesalamine</td></tr> <tr><td></td><td>Carbamezapin</td></tr> <tr><td></td><td>Dobutamine - INT</td></tr> <tr><td></td><td>Flurbiprofen - INT</td></tr> <tr><td></td><td>Pregabalin - INT</td></tr> <tr><td></td><td>Etoricoxib - INT</td></tr> <tr><td></td><td>Entacapone - INT</td></tr> <tr><td></td><td>Meloxicam - INT</td></tr> <tr><td></td><td>Metaxalone - INT</td></tr> <tr><td></td><td>Fenofibrate - INT</td></tr> <tr><td></td><td>Metaformin - INT</td></tr> <tr><td></td><td>Levetiracetam - INT</td></tr> <tr><td></td><td>Fluvoxamine - INT</td></tr> <tr><td></td><td>Mirtazepine</td></tr> <tr><td></td><td>Oxcarbazepin</td></tr> <tr><td></td><td>Oxetacaine - INT</td></tr> <tr><td></td><td>Quitipine Fumarate - INT</td></tr> <tr><td></td><td>Levodopa - INT</td></tr> <tr><td></td><td>Carbidopa - INT</td></tr> <tr><td></td><td>Bronopol - INT</td></tr> <tr><td></td><td>Camitine / Furmarate - INT</td></tr> <tr><td></td><td>Ziprasidone – INT</td></tr> <tr><td></td><td>Baclofen</td></tr> <tr><td></td><td>Irbesartan</td></tr> <tr><td></td><td>Valproic Acid</td></tr> <tr><td></td><td>Meta Chloropropiophenone</td></tr> <tr><td></td><td>2-Amino -5-Methyl Thiazole</td></tr> <tr><td></td><td>Methly Benzothiazine isopropyl Ester</td></tr> <tr><td></td><td>Sumatriptan - INT</td></tr> <tr><td></td><td>Modafinil - INT</td></tr> <tr><td></td><td>Amisulpride - INT</td></tr> <tr><td></td><td>ES Citalopram - INT</td></tr> </table>	Sr. No	Name of the product	Total Production (MT/M)		Intermediate – A	153.8		2-Amino pyridine		Other Bulk Drugs		Sodium Valproate BP/IP/USP		Salbutamol Sulphate BP/IP/USP		Phenyl Propanolamine HCl		Cetirizine Di HCl EP/BP/IP		Premaquine Phosphate IP/BP		Benzocaine I.P.		Nitro Methane		Prioxicam USP		Enalaprilmateate EP/BP/USP		Mesalamine		Carbamezapin		Dobutamine - INT		Flurbiprofen - INT		Pregabalin - INT		Etoricoxib - INT		Entacapone - INT		Meloxicam - INT		Metaxalone - INT		Fenofibrate - INT		Metaformin - INT		Levetiracetam - INT		Fluvoxamine - INT		Mirtazepine		Oxcarbazepin		Oxetacaine - INT		Quitipine Fumarate - INT		Levodopa - INT		Carbidopa - INT		Bronopol - INT		Camitine / Furmarate - INT		Ziprasidone – INT		Baclofen		Irbesartan		Valproic Acid		Meta Chloropropiophenone		2-Amino -5-Methyl Thiazole		Methly Benzothiazine isopropyl Ester		Sumatriptan - INT		Modafinil - INT		Amisulpride - INT		ES Citalopram - INT
Sr. No	Name of the product	Total Production (MT/M)																																																																																												
	Intermediate – A	153.8																																																																																												
	2-Amino pyridine																																																																																													
	Other Bulk Drugs																																																																																													
	Sodium Valproate BP/IP/USP																																																																																													
	Salbutamol Sulphate BP/IP/USP																																																																																													
	Phenyl Propanolamine HCl																																																																																													
	Cetirizine Di HCl EP/BP/IP																																																																																													
	Premaquine Phosphate IP/BP																																																																																													
	Benzocaine I.P.																																																																																													
	Nitro Methane																																																																																													
	Prioxicam USP																																																																																													
	Enalaprilmateate EP/BP/USP																																																																																													
	Mesalamine																																																																																													
	Carbamezapin																																																																																													
	Dobutamine - INT																																																																																													
	Flurbiprofen - INT																																																																																													
	Pregabalin - INT																																																																																													
	Etoricoxib - INT																																																																																													
	Entacapone - INT																																																																																													
	Meloxicam - INT																																																																																													
	Metaxalone - INT																																																																																													
	Fenofibrate - INT																																																																																													
	Metaformin - INT																																																																																													
	Levetiracetam - INT																																																																																													
	Fluvoxamine - INT																																																																																													
	Mirtazepine																																																																																													
	Oxcarbazepin																																																																																													
	Oxetacaine - INT																																																																																													
	Quitipine Fumarate - INT																																																																																													
	Levodopa - INT																																																																																													
	Carbidopa - INT																																																																																													
	Bronopol - INT																																																																																													
	Camitine / Furmarate - INT																																																																																													
	Ziprasidone – INT																																																																																													
	Baclofen																																																																																													
	Irbesartan																																																																																													
	Valproic Acid																																																																																													
	Meta Chloropropiophenone																																																																																													
	2-Amino -5-Methyl Thiazole																																																																																													
	Methly Benzothiazine isopropyl Ester																																																																																													
	Sumatriptan - INT																																																																																													
	Modafinil - INT																																																																																													
	Amisulpride - INT																																																																																													
	ES Citalopram - INT																																																																																													

		Deteracirox - INT																																								
		5-Cyano Phthalide - INT																																								
		Trimethynium Floride – ET-3																																								
		6-Chloro 2-Ox indole																																								
		1,3-Benzisothiazole Piperazine																																								
		Celecoxib - INT																																								
		Bis. Cyano. Anastrozade - INT																																								
		Clopidogrel Bisulpahte																																								
		Tranaxamic Acid																																								
		Flurpitine Matcale																																								
		Sevelamer																																								
		Metoprolol																																								
		Pentaprazole																																								
		Fluticasone – INT																																								
		Budesionide																																								
		Fenasteride																																								
		Loteprednol Danazol																																								
		Hydrocotisone																																								
		Desoxymethasone																																								
		Prednisolone Acetate																																								
		Clobetasol																																								
		Difflorason Granisetrox																																								
		Betamethasone																																								
		Etodolac - INT																																								
		Amiodarone- INT																																								
		Tizanidine – INT																																								
		Ciprofloxacin																																								
		Dothiepin-INT																																								
		Zonisamide - INT																																								
		Paroxetine																																								
		Atorvastatin																																								
		Rosuvastatin																																								
		Montelukast																																								
		Bicalutamide																																								
		Gemcitabine hydrochloride																																								
		Anastrozole																																								
		Rabeprazole																																								
15.	Rain Water Harvesting (RWH)	Not Proposed																																								
16.	Total Water Requirement	<table><tr><th>Sr.No.</th><th>Particulars</th><th>Existin g</th><th>Proposed</th><th>Total (KLD)</th><th>Source</th></tr><tr><td>1</td><td>Domestic</td><td>2</td><td>4.3</td><td>6.3</td><td>MIDC</td></tr><tr><td>2</td><td>Process</td><td>5</td><td>28</td><td>33</td><td>MIDC</td></tr><tr><td>3</td><td>Boiler</td><td rowspan="2">5</td><td>32</td><td rowspan="2">124.5</td><td rowspan="2">MIDC/Recycled water</td></tr><tr><td>4</td><td>Cooling</td><td>87.5</td></tr><tr><td>5</td><td>Gardening</td><td>8</td><td>12</td><td>20</td><td>Treated recycle water</td></tr><tr><td colspan="2">TOTAL</td><td>20</td><td>163.8</td><td>183.8</td><td></td></tr></table>	Sr.No.	Particulars	Existin g	Proposed	Total (KLD)	Source	1	Domestic	2	4.3	6.3	MIDC	2	Process	5	28	33	MIDC	3	Boiler	5	32	124.5	MIDC/Recycled water	4	Cooling	87.5	5	Gardening	8	12	20	Treated recycle water	TOTAL		20	163.8	183.8		
Sr.No.	Particulars	Existin g	Proposed	Total (KLD)	Source																																					
1	Domestic	2	4.3	6.3	MIDC																																					
2	Process	5	28	33	MIDC																																					
3	Boiler	5	32	124.5	MIDC/Recycled water																																					
4	Cooling		87.5																																							
5	Gardening	8	12	20	Treated recycle water																																					
TOTAL		20	163.8	183.8																																						
17.	Storm Water Drainage	Natural Drainage Pattern : W to E Size of SWD : 450 mm																																								
18	Sewage Generation & Treatment	5.67 KLD Sewage will be generated during operational phase which will be sent to STP (6 KLD) Proposed at site. Treated Sewage will be used for gardening. <table><tr><th>Sr.N o.</th><th>Particulars</th><th>Waste Water Quantity (KLD)</th><th>Treatment and disposal</th></tr><tr><td>1</td><td>Domestic</td><td>5.67</td><td>STP of 6 KLD proposed for treatment. Treated water will be reused for gardening</td></tr></table>		Sr.N o.	Particulars	Waste Water Quantity (KLD)	Treatment and disposal	1	Domestic	5.67	STP of 6 KLD proposed for treatment. Treated water will be reused for gardening																															
Sr.N o.	Particulars	Waste Water Quantity (KLD)	Treatment and disposal																																							
1	Domestic	5.67	STP of 6 KLD proposed for treatment. Treated water will be reused for gardening																																							

		<table><tr><td>2</td><td>Process</td><td><table><tr><td>Low COD</td><td>6</td></tr><tr><td>Medium COD</td><td>17</td></tr><tr><td>High COD</td><td>10</td></tr></table></td><td rowspan="4">Low COD effluent will be forwarded to ETP directly. Medium COD will be sent to ETP after Fenton treatment (1kld loss) and High COD will be Forwarded to MEE. Total 46.64 Trade Effluent will be treated in ETP of 100 KLD upto tertiary level and will be reused for cooling and boiler.</td></tr><tr><td>3</td><td>Boiler</td><td>27</td></tr><tr><td>4</td><td>Cooling</td><td>5.64</td></tr><tr><td>5</td><td>Gardening</td><td>-</td></tr><tr><td colspan="2">TOTAL</td><td>Domestic Sewage: 5.67 Trade Effluent to ETP : 46.64</td><td></td></tr></table>	2	Process	<table><tr><td>Low COD</td><td>6</td></tr><tr><td>Medium COD</td><td>17</td></tr><tr><td>High COD</td><td>10</td></tr></table>	Low COD	6	Medium COD	17	High COD	10	Low COD effluent will be forwarded to ETP directly. Medium COD will be sent to ETP after Fenton treatment (1kld loss) and High COD will be Forwarded to MEE. Total 46.64 Trade Effluent will be treated in ETP of 100 KLD upto tertiary level and will be reused for cooling and boiler.	3	Boiler	27	4	Cooling	5.64	5	Gardening	-	TOTAL		Domestic Sewage: 5.67 Trade Effluent to ETP : 46.64																																						
2	Process	<table><tr><td>Low COD</td><td>6</td></tr><tr><td>Medium COD</td><td>17</td></tr><tr><td>High COD</td><td>10</td></tr></table>	Low COD	6	Medium COD	17	High COD	10	Low COD effluent will be forwarded to ETP directly. Medium COD will be sent to ETP after Fenton treatment (1kld loss) and High COD will be Forwarded to MEE. Total 46.64 Trade Effluent will be treated in ETP of 100 KLD upto tertiary level and will be reused for cooling and boiler.																																																					
Low COD	6																																																													
Medium COD	17																																																													
High COD	10																																																													
3	Boiler	27																																																												
4	Cooling	5.64																																																												
5	Gardening	-																																																												
TOTAL		Domestic Sewage: 5.67 Trade Effluent to ETP : 46.64																																																												
19	Effluent Characteristics	<p>Inlet Parameters</p> <p>Flow : 100 CMD</p> <table><tr><th>Sr. No.</th><th>Parameters</th><th>Units</th><th>Conc. Effluent</th><th>R & D Effluent</th><th>Dilute Effluent (Cooling Tower & Boiler Blowdown)</th></tr><tr><td>1</td><td>Flow</td><td>CMD</td><td>40</td><td>30</td><td>30</td></tr><tr><td>2</td><td>pH</td><td>---</td><td>Acidic</td><td>Acidic</td><td>Acidic</td></tr><tr><td>2</td><td>COD</td><td>mg l</td><td>50000</td><td>5000</td><td>500</td></tr><tr><td>3</td><td>BOD</td><td>mg l</td><td>6000</td><td>2000</td><td>200</td></tr><tr><td>4</td><td>TSS</td><td>mg l</td><td>1800</td><td>1000</td><td>500</td></tr><tr><td>5</td><td>O & G</td><td>mg l</td><td><10</td><td>10-20</td><td>10-50</td></tr></table> <p>The expected outlet would be as per MPCB standards given below.</p> <table><tr><th>Sr. No.</th><th>Parameters</th><th>MPCB Limits</th></tr><tr><td>1.</td><td>pH</td><td>5.5 .to 9</td></tr><tr><td>2.</td><td>BOD in mg l</td><td>Less than 100</td></tr><tr><td>3.</td><td>COD in mg l</td><td>Less than 250</td></tr><tr><td>4.</td><td>Suspended Solids in mg l</td><td>Less than 100</td></tr><tr><td>5.</td><td>Fat Oil & Grease in mg l</td><td>Less than 10</td></tr></table>	Sr. No.	Parameters	Units	Conc. Effluent	R & D Effluent	Dilute Effluent (Cooling Tower & Boiler Blowdown)	1	Flow	CMD	40	30	30	2	pH	---	Acidic	Acidic	Acidic	2	COD	mg l	50000	5000	500	3	BOD	mg l	6000	2000	200	4	TSS	mg l	1800	1000	500	5	O & G	mg l	<10	10-20	10-50	Sr. No.	Parameters	MPCB Limits	1.	pH	5.5 .to 9	2.	BOD in mg l	Less than 100	3.	COD in mg l	Less than 250	4.	Suspended Solids in mg l	Less than 100	5.	Fat Oil & Grease in mg l	Less than 10
Sr. No.	Parameters	Units	Conc. Effluent	R & D Effluent	Dilute Effluent (Cooling Tower & Boiler Blowdown)																																																									
1	Flow	CMD	40	30	30																																																									
2	pH	---	Acidic	Acidic	Acidic																																																									
2	COD	mg l	50000	5000	500																																																									
3	BOD	mg l	6000	2000	200																																																									
4	TSS	mg l	1800	1000	500																																																									
5	O & G	mg l	<10	10-20	10-50																																																									
Sr. No.	Parameters	MPCB Limits																																																												
1.	pH	5.5 .to 9																																																												
2.	BOD in mg l	Less than 100																																																												
3.	COD in mg l	Less than 250																																																												
4.	Suspended Solids in mg l	Less than 100																																																												
5.	Fat Oil & Grease in mg l	Less than 10																																																												
20	ETP Details	Quantity of Effluent Generation : 46.64 KLD Capacity of the ETP (Tertiary Level): 100 KLD Capacity of STP: 6 KLD Quantity of Treated Effluent Recycled: 37.31 KLD Quantity of Treated Water sent to the CETP: NIL																																																												
21	Note on ETP technology to be used	Effluent will be treated in the full fledged ETP up to Tertiary Level. And used within the plant for cooling and boiler water requirement																																																												
22	Disposal of the ETP sludge (if applicable)	Will be sent to CHWTSDF Taloja.																																																												

23.	Solid Waste Management	Waste	Category	Existing	Proposed	Total	Treatment and Disposal
		Chemical Sludge from ETP	34.3	50 kg/month	1800 kg/month	1850 kg/month	Sent to MWML, Taloja site
		Spent catalyst	28.2	10 kg/month	100 kg/month	110 kg/month	
		Distillation residue	20.3	30 kg/month	2500 kg/month	2530kg/month	
		Discarded Containers	33.3	50 nos./month	500nos./month	550 nos./month	Sold to Authorized recycler

24.	Atmospheric Emissions (Flue gas characteristics SPM, SO ₂ , NO _x , CO, etc)	Sr. no.	Pollutant	Source of Emission	
		1	SPM	Process/Boiler/DG set	
		2	SO ₂	Boiler/DG set	
		3	NO _x	Boiler/DG set	
		4	HCl	Process	

25.	Stack Emission Details: (All the stack attached to Boilers, Captive Power Plant, DG Sets, Incinerator both for existing and proposed activity). Please indicate the specific section to which the stack is attached. Eg: Process section, DG set, Boilers, Power Plant, incinerator etc. Emissions rate (kg/hr) for each pollutant (SPM, SO ₂ , NO _x etc. should be specified	Description	Boiler 1	Boiler 2	Thermopack	D.G set-1	D.G set-2
		Capacity	2TPH	0.6TPH	0.800 TPH	125 KVA	250 KVA
		Diameter of Stack (m)	0.6	0.11	0.11	0.2	0.200
		Stack Height (m)		11	11	2.5+building height	3.5+building height
		Stack Gas Temperature (°C)	140	107	107	40	40
		Stack Gas Velocity (m/s)	9	12	12	5	5
		Fuel Type and Consumption (KG/hr)	Coal	FO	FO	LDO	LDO
		Sulfur Content (%)	84	25	4	0.47	0.97
		Nitrogen Content (%)	0.5	3.5	3.5	0.5	0.5
		Emission Rate (g/s)	1.22	0.1	0.1	0.08	0.08
		PM ₁₀	0.052				
		PM _{2.5}	0.049				
		SO ₂	0.23	0.48	0.078	0.0013	0.0027
		NO _x	0.93	0.02	0.004	0.0002	0.0004

26.	Emission Standard	Pollutant	Permissible Standard	Proposed Concentration	Remarks
		SPM	150 mg/Nm ³	<150	As per MPCB Consent
		SO ₂	54 kg/d	<54	
		HCL/Acid Mist	35 mg/Nm ³	<35	

27.	Ambient Air Quality Data	Location of Monitoring	A1	A2	A3	A4	A5	A6	NAAQS	
		Duration of Monitoring	24 hrs							
		Pollution Parameters:-								
		PM ₁₀ (µg/ m ³)	Min.	74	73	96	86	79	87	100
			Max.	93	81	103	102	93	93	
			Avg.	82	77	99	94	86	91	
			98 %ile	91	81	103	102	93	93	
		PM _{2.5} (µg/m ³)	Min.	43	46	44	40	38	37	60
			Max.	62	53	53	56	48	48	
			Avg.	54	49	49	48	43	44	
			98 %ile	62	53	52	56	47	48	
		SO ₂ (µg/m ³)	Min.	12.6	9.0	19.2	16.4	13.3	12.1	80
			Max.	22.5	12.5	23.2	22.3	16.8	17.1	

			Avg.	17.4	11.2	21.3	18.9	14.6	15.4																													
			98 %ile	22.1	12.5	23.1	21.5	16.2	17.0																													
		NO _x (µg/m ³)	Min.	27.0	22.7	52.8	45.3	34.3	30.2	80																												
			Max.	43.2	31.4	66.5	55.1	48.1	42.2																													
			Avg.	33.5	26.4	59.8	50.5	41.9	39.1																													
			98 %ile	42.4	31.2	66.4	55.0	47.8	42.2																													
		CO (mg/m ³) (8hrs)	Min.	0.20						02																												
			3		0.205	0.207	0.226	0.250	0.234																													
			Max.	0.28																																		
			3		0.329	0.308	0.241	0.256	0.301																													
			Avg.	0.24																																		
			8		0.249	0.248	0.234	0.253	0.268																													
			98 %ile	0.28																																		
			2		0.322	0.308	0.241	0.255	0.300																													
		NH ₃ (µg/m ³)	Min.	10.1	10.7	10.9	8.6	7.3	7.3	400																												
			Max.	16.0	14.6	15.8	13.1	12.7	12.8																													
			Avg.	12.8	12.4	12.3	11.0	10.6	10.9																													
			98 %ile	15.6	14.3	15.3	12.7	12.6	12.7																													
28.	Details of Fuel used: Source of Fuel : Mode of Transportation of fuel to site	Coal: 2TPD FO- 700 lit/day HSD- 1050 lit/month. Mode of Transportation : By Road																																				
29.	Energy	Source: MSEDCL Existing:368 kW and after Expansion it will be 656 kW Existing: 1 DG Set of 125 KVA. Proposed: 1DG Set of 250 KVA																																				
30.	Green Belt Development	3983 m ² (33% of plot area)																																				
31.	Details of pollution control system	Water: 5.67 KLD Sewage will be generated during operational phase which will be sent to STP of 6 KLD for Treatment. Treated Sewage water will be reused for gardening purpose at site. 46.64 KLD Industrial Effluent will be generated during operational phase. ETP of 100 KLD capacity will be provided to treat industrial effluent up to Tertiary Level and will be reused. Air: Boiler will be provided with cyclone separator as APCS and adequate stack height of 30.5 m, and wet scrubber will be provided to control process emissions. The main pollutants in process emission will be HCl. Solid Waste: <table><tr><th>Waste</th><th>Category</th><th>Existing</th><th>Proposed</th><th>Total</th><th>Treatment and Disposal</th></tr><tr><td>Chemical Sludge from ETP</td><td>34.3</td><td>50 kg/month</td><td>1800 kg/month</td><td>1850 kg/month</td><td rowspan="3">Sent to MWML, Taloja site</td></tr><tr><td>Spent catalyst</td><td>28.2</td><td>10 kg/month</td><td>100 kg/month</td><td>110 kg/month</td></tr><tr><td>Distillation residue</td><td>20.3</td><td>30 kg/month</td><td>2500 kg/month</td><td>2530kg/month</td></tr><tr><td>Discarded Containers</td><td>33.3</td><td>50 nos./month</td><td>500nos./month</td><td>550 nos./month</td><td>Sold to Authorized recycler</td></tr></table> Noise: The workers will be provided ear muff, ear plug while working in noisy area. Acoustic systems will be provided to D.G. set. However, D.G. set will be as stand by in case of emergency or during the power failure. Acoustic enclosure will be provided for process air blower.									Waste	Category	Existing	Proposed	Total	Treatment and Disposal	Chemical Sludge from ETP	34.3	50 kg/month	1800 kg/month	1850 kg/month	Sent to MWML, Taloja site	Spent catalyst	28.2	10 kg/month	100 kg/month	110 kg/month	Distillation residue	20.3	30 kg/month	2500 kg/month	2530kg/month	Discarded Containers	33.3	50 nos./month	500nos./month	550 nos./month	Sold to Authorized recycler
Waste	Category	Existing	Proposed	Total	Treatment and Disposal																																	
Chemical Sludge from ETP	34.3	50 kg/month	1800 kg/month	1850 kg/month	Sent to MWML, Taloja site																																	
Spent catalyst	28.2	10 kg/month	100 kg/month	110 kg/month																																		
Distillation residue	20.3	30 kg/month	2500 kg/month	2530kg/month																																		
Discarded Containers	33.3	50 nos./month	500nos./month	550 nos./month	Sold to Authorized recycler																																	
32.	Environmental Management Plan Budgetary Allocation	Sr. No.	Particulars	Capital Cost (Rs. crores)	Recurring Cost Per Annum (Rs. Crores PA)																																	
		1	Air Pollution Control	0.2	0.04																																	
		2	Water Pollution Control	1.25	0.125																																	
		3	Solid / Hazardous Waste Control	0.3	0.03																																	
		4	Noise Pollution	0.1	0.01																																	

		Control																															
		5	Environmental Monitoring	0.15	0.02																												
		6	Occupational Health & Safety	0.25	0.03																												
		7	TOTAL	2.25	0.255																												
33.	EIA submitted(If yes then submit the salient features)	<p>Yes, EIA Report has been submitted on 06.4.2015 Study Period : 1st March, 2014 – 31st May, 2014 Air Monitoring Locations : 6 Noise Monitoring Locations : 6 Surface Water Monitoring Locations : 4 Ground Water Monitoring Locations : 7 Soil Monitoring Locations : 6 Proposed Mitigation Measures : Water: 5.7 KLD Sewage will be generated during operational phase which will be send to STP and treated Sewage will be used for gardening at site . 44 KLD Industrial Effluent will be generated during operational phase. ETP of 100 KLD capacity will be provided to treat industrial effluent up to Tertiary Level. Treated Effluent will be reused for boiler and cooling water requirement. Air: Boiler will be provided with cyclone separator as APCS and adequate stack height of 30.5 m, and wet scrubber will be provided to control process emissions. The main pollutants in process emission will be HCl. Solid Waste:</p> <table border="1"> <thead> <tr> <th>Waste</th><th>Category</th><th>Existing</th><th>Proposed</th><th>Total</th><th>Treatment and Disposal</th></tr> </thead> <tbody> <tr> <td>Chemical Sludge from ETP</td><td>34.3</td><td>50 kg/month</td><td>1800 kg/month</td><td>1850 kg/month</td><td rowspan="2">Sent to MWML, Taloja site</td></tr> <tr> <td>Spent catalyst</td><td>28.2</td><td>10 kg/month</td><td>100 kg/month</td><td>110 kg/month</td></tr> <tr> <td>Distillation residue</td><td>20.3</td><td>30 kg/month</td><td>2500 kg/month</td><td>2530kg/month</td><td rowspan="2">Sold to Authorized recycler</td></tr> <tr> <td>Discarded Containers</td><td>33.3</td><td>50 nos./month</td><td>500nos./month</td><td>550 nos./month</td></tr> </tbody> </table> <p>Noise: The workers will be provided ear muff, ear plug while working in noisy area. Acoustic systems will be provided to D.G. set. However, D.G. set will be as stand by in case of emergency or during the power failure. Acoustic enclosure will be provided for process air blower. Conclusion: It be concluded that on positive implementation of Mitigation Measures and Environmental Management Plan during the minor constructional and operational phase, there will be negligible impact on the environment and the proposed project will be beneficial.</p>				Waste	Category	Existing	Proposed	Total	Treatment and Disposal	Chemical Sludge from ETP	34.3	50 kg/month	1800 kg/month	1850 kg/month	Sent to MWML, Taloja site	Spent catalyst	28.2	10 kg/month	100 kg/month	110 kg/month	Distillation residue	20.3	30 kg/month	2500 kg/month	2530kg/month	Sold to Authorized recycler	Discarded Containers	33.3	50 nos./month	500nos./month	550 nos./month
Waste	Category	Existing	Proposed	Total	Treatment and Disposal																												
Chemical Sludge from ETP	34.3	50 kg/month	1800 kg/month	1850 kg/month	Sent to MWML, Taloja site																												
Spent catalyst	28.2	10 kg/month	100 kg/month	110 kg/month																													
Distillation residue	20.3	30 kg/month	2500 kg/month	2530kg/month	Sold to Authorized recycler																												
Discarded Containers	33.3	50 nos./month	500nos./month	550 nos./month																													

Previous Consideration: The 82nd Meeting held on 3rd, 4th & 5th July, 2014

Decision: The case was discussed on the basis of the presentation made by the proponent. Besides the TOR presented by the project proponent and the Model ToR, following points shall also be covered during the preparation of EIA report:

1. PP to submit details and photographs of hazardous waste storage.
2. 1, 4 Dioxane and Chloroform shall be avoided in the process.
3. PP shall prepare list of product mix indicating the manufacturing capacity in view of the total quantity of manufacturing.
4. HAZOP, quantitative risk assessment studies pertaining to hazardous chemicals, solvents. Fireload / fire water calculations.
5. Treatment of non-biodegradable effluent.

The environmental consultant to be engaged for preparation of EIA/EMP report should be accredited by Quality Council of India (QCI)/ NABET. For data collection and analysis only MoEF or NABL

approved laboratories should be employed. As soon as the draft EIA report is prepared, the same may be submitted to the Maharashtra Pollution Control Board (MPCB) for conducting public hearing as per EIA Notification, 2006 and MoEF OM no. J-11013/36/2014-A1-I dt.16th May, 2014. On revising the EIA Report, addressing all concerns raised during the public hearing /public consultation, the same shall be submitted to the SEAC I, Maharashtra for appraisal.

Previous consideration: The 102nd Meeting held on 15th & 16th May, 2015

Decision: The project proposal was discussed on the basis of presentation made and documents submitted by the proponent. Committee noted that the project was considered as 5(f) B1 category of EIA Notification, 2006.

The Committee observed that the vicinity of Tarapur MIDC has become hazardous from the point of view of Air quality particularly at the locations Boisar and Nandgaon. Ambient Air Quality has exceeded 100mg/Nm³ for PM₁₀. This situation can only be salvaged if future land use is so modified that R-Zone does not come up in this area. Government should advice MMRDA to suitably modify the land use plan to achieve the desired goal.

After detailed consideration of the presentation and all aspects of Environmental Impact the Committee decided to defer the proposal for the following compliances:

1. The PP needs to provide 12% for parking by creating parking area from open space and accordingly modify the layout plan.
2. The PP reported that Chloroform has been replaced by MDC and 1-4, Dioxane by Tetrahydro Furan. The Committee noted these changes.
3. Water consumption for proposed boiler appears to be high. PP could not explain this. It is required to explain this phenomenon.
4. The PP should give design details of ETP with dimensions of various components.
5. PP should carry out Treatability Study of new products and identify the process with high COD effluent.
6. PP to submit water budget in detail.
7. Emergency movement of vehicles to be shown in a rational manner and the layout modified accordingly.

Previous consideration: The 115th Meeting held on 3rd, 4th & 5th December, 2015

Decision: The Project was considered under 5(f)-B1 category of the Schedule of the EIA Notification, 2006. The PP plans to expand the manufacturing of APIs and Intermediate products from 5.85 to 153.8 TPM in the existing plant. The proposal was previously considered in the 82nd meeting for ToR and subsequently in the 102nd meeting.

In 102nd meeting certain points of compliance were given to PP. the PP submitted the compliance and gave a presentation on EIA Report with the additional points of compliance.

After detailed discussion the Committee made the following observations:

1. The PP needs to provide 12% of layout area for parking. Further facilities for emergency movement of vehicles, evacuation in times of hazard has to be put in place. The hazard management infrastructure like fire water tanks, fire hydrants, assembly points, detectors etc. need to be provided. All these aspects are depicted in the diagram.

2. The PP has agreed to replace Chloroform by Methylene Dichloride (MDC) and 1, 4 Dioxyl by Tetra hydro Furan. Both these chemicals need to be handled carefully and employees should be trained about their hazardous nature in case of accidental release.
3. The plant will be run as a **Zero Liquid Discharge plant**. The effluent will be segregated in 3 streams- 1st 'the low COD, BOD & TDS stream' will be led directly to ETP of capacity 100 CMD. The 2nd stream of 'TDS levels 2000-5000 mg/l' will be passed through the Phenton reactor and subsequently to ETP. 3rd stream of 'TDS levels 25000-60000 mg/l' will be passed through a Stripper and MEE and sludge from MEE will be separated using a centrifuge and a filter press. The Committee insisted that there should be maximum recovery of solvents, not less than 90%.
4. Spent solvents/ acids/ by-products should not be sent to un-authorized vendors, so as to avoid damage to the environment.

The team comprising of Shri. T. C. Benjamin and Dr. Ramesh Dod visited the plant on 9th December, 2015 and inspection report is enclosed. The item was deferred for further discussion on the inspection report and submission of the reports as mentioned in it.

Visit Report-M/s. Ramdev Chemicals Pvt. Ltd., Tarapur MIDC

Date-9/12/2015

The following members visited the plant on 9/12/2015-

1. Shri. T. C. Benjamin, Chairman
2. Prof.(Dr.) Ramesh Dod, Member

The following observations were made:

1. It is observed that the Consent to Operate has been granted for 5.85 MT/M. the PP proposes to increase the production to 153.8 MT/M.
2. The Reactors have been installed in various buildings as follows:

Building	Year of construction of Buildings	Reactors	Year of installation of reactors
1	2000	8	2012
2	2000	10	2014
3	2000	12	2012

It was stated by the PP that the consented quantum of 5.85 MT/M was to be produced using the reactors (30 Nos.) in the buildings 1, 2 and 3 as per the Consent to Operate; the expansion envisages replacing the 12 reactors in building no.3 with new reactors- the 10 reactors in building no. 2 will be operated during the time of replacement.

The PP and MPCB have been requested to confirm this position in writing, so that violation can be ruled out.

It is desirable that the item is kept pending till the reports of PP and MPCB are received.

Rest of the infrastructure was found to conform to the EIA Report which has already been discussed in the 115th meeting.

3. RO permeate should be fully recycled for cooling towers only.
4. Treated domestic sewage should be used on land for gardening. Separate STP need to be installed.



T. C. Benjamin



Ramesh Dod

Visit report-

Previous consideration: The 120th Meeting held on 29th & 30th January, 2016

Decision: Committee noted that the project was considered as 5(f) B1 category of EIA Notification, 2006. The PP intends to expand manufacturing of APIs and intermediate products from 5.85 TPM to 153.8 TPM in the existing plant. In the 115th meeting certain points of compliance were discussed and the PP gave a detailed presentation of its EIA Report. Certain further observations were made in the 115th meeting. Thereafter a team comprising of the Chairman and Prof. (Dr.) Ramesh Dod, Member visited the plant on 9.12.2015.

The PP explained that the extra 10 reactors in building no. 2 have specifically been installed to serve as a backup for 12 reactors in building no. 3 which will be dismantled and new reactors installed so that a total compliment of 30 reactors [Bldg no.1- 8reactors, Bldg no.2- 10 reactors and Bldg no. 3- 12 reactors] would be available to cater to the enhanced production capacity of 153.8 TPM. The Committee also noted that the SRO-Tarapur 1 had committed that the PP has not started manufacturing any new product nor has increased the quantum of production. However, a formal letter from MPCB has not yet been submitted for scrutiny of the Committee.

After detailed discussion the Committee made the following observations:

1. The PP needs to provide 12% of layout area for parking. Further facilities for emergency movement of vehicles, evacuation in times of hazard have to be put in place. The hazard management infrastructure like fire water tanks, fire hydrants, assembly points, detectors etc. need to be provided. All these aspects are depicted in the diagram and should be in place before commissioning the expansion.
2. The PP has agreed to replace Chloroform by Methylene Dichloride (MDC) and 1, 4 Dioxyl by Tetra hydro Furan. Both these chemicals need to be handled carefully and employees should be trained about the response in case of accidental release.
3. The plant will be run as a **Zero Liquid Discharge plant**. The effluent will be segregated in 3 streams- the 1st 'low COD, BOD & TDS stream' will be led directly to ETP of capacity 100 CMD. The 2nd stream of 'TDS levels 2000-5000 mg/l' will be passed through the Phenton reactor and subsequently to ETP. 3rd stream of 'TDS levels 25000-60000 mg/l' will be passed through a Stripper and MEE and sludge from MEE will be separated using a centrifuge and a filter press. The Committee insisted that there should be maximum recovery of solvents, not less than 90%.
4. Spent solvents/ acids/ by-products should not be sent to un-authorized vendors, so as to avoid damage to the environment.
5. RO permeate will be fully recycled for cooling tower only.
6. Treated domestic sewage will be used for gardening.
7. A separate STP of capacity 6 KLD will be installed.

The Committee decided to await the letter from MPCB regarding violation before taking any decision in the matter.

Previous consideration: The 128th Meeting held on 2nd, 3rd & 4th June, 2016

Decision: The PP submitted a letter from Shri. P.K.Mirashe, Assistant Secretary (Tech.), Maharashtra Pollution Control Board in which he has submitted that the PP had not increased their production and not produced any additional products. The Committee could not come to a consensus whether the violation has been committed, on the basis of this submission of Assistant Secretary (Tech.).

To have a more elaborate discussion with all members of the Committee, the item was deferred.

Previous consideration: The 129th Meeting held on 16th, 17th & 18th June, 2016

Decision: The Committee decided to defer the item to get the views of all the members. The Committee also desired to have a letter from MPCB clearly stating whether violation has been committed or not.

Present consideration 132nd meeting:


The Committee considered the contention of the PP that extra reactors were installed to facilitate replacement of old reactors. Assistant Secretary (tech.), Maharashtra Pollution Control Board has clarified that the industry has neither crossed its existing manufacturing capacity nor undertaken production of any new products. (Letter is enclosed as *Annexure 8.1*)

The Chairman sought views of the members; the majority of the members concluded that **violation had not been committed**. the Committee therefore decided to **recommend** the proposal for EC subject to the following conditions (1-8):

1. The PP needs to provide 12% of layout area for parking. Further facilities for emergency movement of vehicles, evacuation in times of hazard have to be put in place. The hazard management infrastructure like fire water tanks, fire hydrants, assembly points, detectors etc. need to be provided. All these aspects are depicted in the diagram (enclosed as *Annexure 8.2*) and should be in place before commissioning the expansion.
2. The PP has agreed to replace Chloroform by Methylene Dichloride (MDC) and 1, 4 Dioxyl by Tetra hydro Furan. Both these chemicals need to be handled carefully and employees should be trained about appropriate response in case of accidental release.
3. The plant will be run as a **Zero Liquid Discharge plant**. The effluent will be segregated in 3 streams- the 1st 'low COD, BOD & TDS stream' will be led directly to ETP of capacity 100 CMD. The 2nd stream of 'TDS levels 2000-5000 mg/l' will be passed through the Phenton reactor and subsequently to ETP. 3rd stream of 'TDS levels 25000-60000 mg/l' will be passed through a Stripper and MEE and sludge from MEE will be separated using a centrifuge and a filter press.
4. The Committee insisted that there should be maximum recovery of solvents, in any case not less than 90%.
5. Spent solvents/ acids/ by-products should not be sent to un-authorized vendors, so as to avoid damage to the environment.
6. RO permeate will be fully recycled for cooling tower only.
7. Treated domestic sewage will be used for gardening.
8. A separate STP of capacity 6 KLD will be installed for treatment of domestic waste water.

"Annexure 8.1"

MAHARASHTRA POLLUTION CONTROL BOARD

Tel: 24010437/24020781/24014701		Kalpatur Point, 2nd - 4th Floor
Fax: 24024068 / 24023515		Opp. Cine Planet Cinema,
Website: http://mpcb.gov.in		Near Sion Circle, Sion (E)
E-mail: ast@mpcb.gov.in		Mumbai-400 022

No. MPCB/AS(T)/TB/B- 29.20

Date 29/07/2016.

To,
The Member Secretary,
SEAC-I, Environment Department,
Government of Maharashtra,
15th floor, New Administrative Bldg.,
Madam Cama Road, Mantralaya,
Mumbai-400 032.

Sub:- Visit of SEAC-I to M/s Ramdev Chemical Pvt. Ltd., Plot No. E-41 & E-129,
MIDC Tarapur, Tal. & Dist. Palghar-401 506 on 09/12/2015.

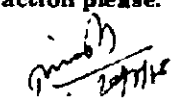
Ref:- 1. Visit report of the Committee dtd. 08/12/2015.
2. Industry's clarification letter dtd. 11/01/2016.
3. S.R.O.(Tarapur)'s inspection report dtd. 12/04/2016.
4. Board's letter No. MPCB/AS(T)/TB/B-1869 dtd. 10/05/2016.
5. E-mail of SEAC-I Cell, Env. Dept. dtd. 19/07/2016.

With reference to above subject matter, the Board has already submitted its report vide ref. No. (4) in which it was clearly mentioned that -

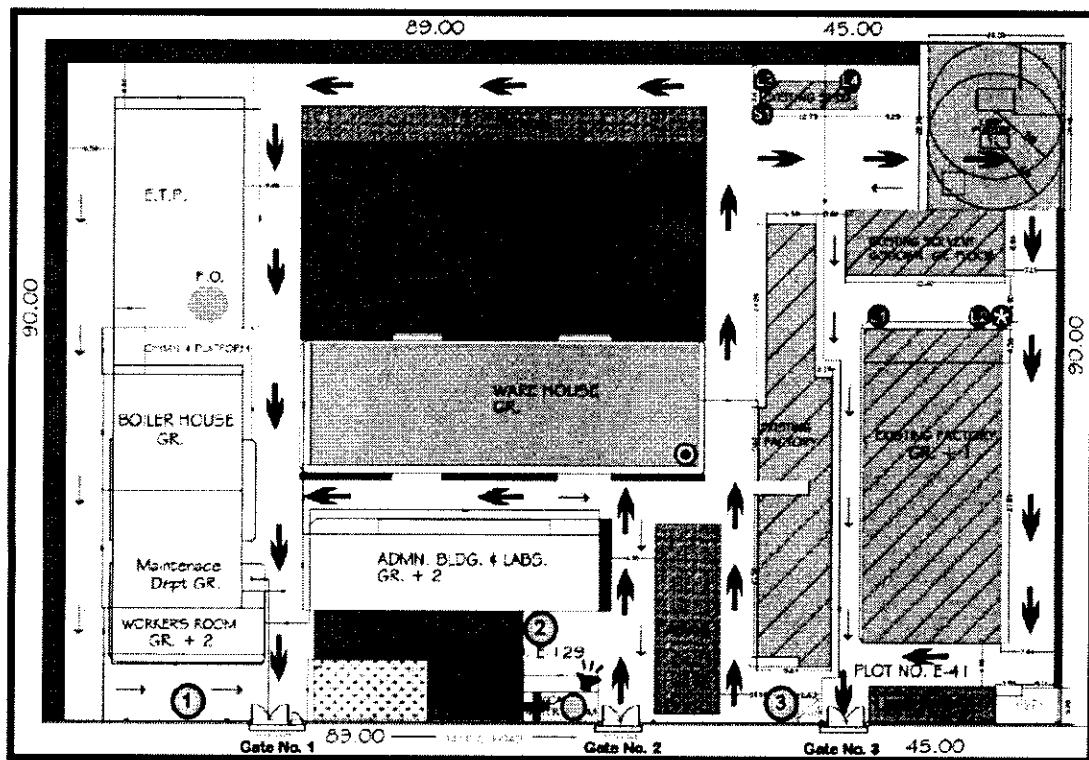
- Industry has not increased production of their existing products and not produced any additional products which has been verified from RG-I register of the industry;
- Consent to Operate of existing unit for mfg. of bulk drugs is valid upto 31/12/2016;
- Board has granted Consent to Establish for proposed expansion on 25/02/2013 upto commissioning of the unit or upto 5 years whichever is earlier;
- S.R.O. (Tarapur-I) has visited industry again on 12/04/2016 and reported that industry has replaced existing old reactors with new reactors of same capacity for quality enhancement of existing products.

From the above, it is clarified that industry has neither crossed its existing manufacturing capacity nor undertaken production of any new products.

This is submitted for your information and further necessary action please.


(P. K. Mirashe)
Member Secretary

"Annexure 8.2"



Siren	Assembly Point	First Aid	Water Storage
Emergency Control Centre	Escape Route	Wind direction Sack	Hazardous Area Fire/Explosion/toxic gas release

S1	Safety shower & eye wash fountain.	*	Water curtain.
L1	Chlorine leak detector.	L3	Hydrogen Chloride leak detector.
L2	Ammonia leak detector.	L4	Bromine leak detector.
→	Emergency vehicle movement at site.		

- Road tanker, truck near underground tank farm area to use Gate No. 3.
- Road tanker, truck near warehouse area to use Gate No. 1.
- Note: Gate No. 2, to be kept unobstructed for fire tender and ambulance all the time.

Item no. 9	Minor Minerals (stone) Sangli (01) (new)
-------------------	---

The proposal was considered under category 1(a)-B2 of the schedule of EIA Notification 2006. The brief information submitted by the PP and decision of the Committee are depicted below:

Member Secretary

Chairman

S. No.	Name of the Proponent, Mouz, Taluka, Land type	Gat No./ Survey No.	Area (ha)	Observation of the Committee	Recommendations
1.	Shri. Jamir Abdul Hajarat	-----	6.14	Mining Plan was not available for the discussion. No hill cutting was involved. There were no habitations, water bodies, roads & public structures within 200m of the proposed quarry. AAQS shows that GLCs were within prescribed limits.	Deferred for- 1. Submission of approved Mining Plan.

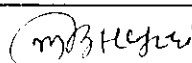
Item no. 10	Minor Minerals (stone) Ratnagiri (01) [new]
--------------------	--

DMO remained absent hence **deferred**.

Item no. 11	Minor Mineral (stone) Kolhapur (1) [114th compliance]
--------------------	---

The proposal was considered under category I(a)-B2 of the schedule of EIA Notification 2006. The brief information submitted by the PP and decision of the Committee are depicted below:

S. No.	Name of the Proponent, Mouz, Taluka, Land type	Gat No./ Survey No.	Area (ha)	Observation of the Committee	Recommendations
1.	Shri. Nishil Potdar Halkarni, Chandgad	290 part	2.05 ha	The PP presented a letter from Deputy Conservator Forest, Kolhapur Forest Division, Kolhapur in which he had submitted that "area where quarry is proposed is not frequented by wild elephants though wild elephants frequent almost all the extent of Chandgad Taluka in which the quarry is situated. To get more clarity in this issue, the Chairman requested Collector Kolhapur to submit a specific and comprehensive report.	Deferred for Collector's report whether quarrying in this area would compromise the wild-life habitat and movements.


Member Secretary


Chairman

Item no. 12	M/s. FINE ORGANIC INDUSTRIES PVT LTD (ToR) New Proposed Oleochemical Manufacturing Unit at Plot No. N -42/1, Additional Ambernath MIDC, Tehsil Ambernath, Dist. Thane
--------------------	---

The Committee noted that PP had made certain changes in the proposed project vis-à-vis earlier submission of FORM-I. The revised FORM-I has been submitted. The PP made a detailed presentation for their proposed project of manufacturing of Oleo chemicals (viz Fatty Amides (Primary & Secondary Amides of fatty acids), Distilled Mono Glycerides of fatty acids, Special fatty acids esters (Mixed special esters of fatty acids) and its by product Liquor ammonia) to the extent of 47500 TPA. The Committee considered the project under category 5(f)-B1 of the schedule of the EIA Notification 2006.

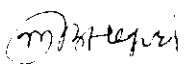
After detailed discussion, the Committee made the following observations:

1. The layout of the plant has been satisfactorily prepared with proper evacuation routes and accesses. However, PP should take up proper storm water management so that the entire storm water run-off is collected and led to the MIDC drain and not in the River/Nalla.
2. The PP intends to run the entire system as a Zero Liquid Discharge Process. Detailed material balance and atom efficiency may be submitted, so that the extent of losses and how the losses are treated (in particular how Nitrogen is degraded) shall be given. ETP design should be on the basis of treatability studies carried out.
3. Water balance both for wet and dry season shall be given. PP shall carry out steps to conserve water through rain water harvesting, recycling and reusing.
4. Emission management may be elaborated based on the worst possible scenario. Through PP is using natural gas for thermopack, air pollution controlling devices and stack height may be determined considering the worst possible scenario.
5. A separate chapter on Risk Assessment and Risk Mitigation studies shall be given in the EIA report particularly pertaining to HSD, Ammonia and Ethylene Diamine. A diagram showing various hazard management facilities shall be incorporated in the EIA Report.
6. Disposal /use of by-products particularly Liquor ammonia should be managed with care. It should be ensured that they are not indiscriminately disposed of in the environment.
7. The ToR shall be in accordance with the provisions contained in the Model ToR prescribed by MOEF&CC in April, 2015.

After considering all aspects of environmental impact, the Committee decided to **approve ToR** for preparation of EIA report subject to the consideration of points 1-7 above.

Item no. 13	M/s. Maharashtra State Road Development Corporation Ltd. District Raigad and Pune (ToR) For amendment in ToR of proposed capacity augmentation of Mumbai-Pune corridor
--------------------	--

PP remained absent hence **deferred**.


Member Secretary


Chairman

Discussion Item 1	Discussion on M/s. Robo Silicon Pvt. Ltd.
------------------------------	--

The Committee went through the reports of Prof. T. N. Singh, IIT Mumbai and Deputy Director, GSDA. The former has concluded that the vibration induced by controlled blasting expressed in terms of Peak Particulate Velocity (PPV) considered over an incidence of 1000 blasts will not damage any structures surrounding the quarry area and will not have any impact on the cutting on the expressway. The Committee made some rough calculations on number of blasts required for quarrying to extract 150 lakh MT of stone and concluded that a minimum of 2300 blasts will be required using 17kg of Charge explosives. Prof. Singh was requested to recalculate the impact of such 2300 blasts on the rock face of the Expressway excavation situated at a distance of 7.14km.

The representative of GSDA agreed to identify that part of the proposed quarry which has a slope of more than 1:10, so that the geo-hydrological zones can be correctly identified.

Both Prof. Singh and representative of GSDA were requested to submit their report latest by 15th August, 2016 and remain present for the next SEAC meeting for further discussion. The item was deferred.

Discussion Item 2	Discussion on M/s. Nanu Industries and M/s. Alcon Industries
------------------------------	---

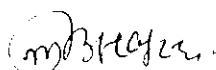
The proposals were considered under category 1(a)-B2 of the schedule of EIA Notification 2006.

S. No.	Name of the Proponent, Mouz, Taluka, Land type	Gat No./ Survey No.	Area (ha)
1.	Nanu Industries Parme, Dodamarg	26(p), 33/1	4.90
2.	M/s. Alcon industries Talekhol, Dodamarg	372 (p)	1.60

1. Nanu Industries-

Previous consideration: The 110th Meeting held on 10th & 11th September, 2015

Decision: The team has observed, interalia, that the quarry is in the Run-off zone and in the midst of an area which is rich in bio-diversity. The team has not recommended the quarry. The Committee after considering the report of the team and after discussing all aspects of environmental impact that the quarrying will entail decided to recommend the proposal for **rejection**.



Member Secretary



Chairman

Previous consideration: The 127th Meeting held on 12th & 13th May, 2016

Decision:

S. No.	Name of the Proponent, Mouz, Taluka, Land type	Gat No./ Survey No.	Area (ha)	Observation of the Committee	Recommendations
1.	Nanu Industries Parme, Dodamarg	26(p), 33/1	4.90	<p>The Committee noted that SEIAA in its 97th meeting had referred the proposal back to SEAC to give reasoned justification referring to various requirements applicable for similarly situated cases under EIA Notification 2006 and its subsequent amendments.</p> <p>The Committee observed that the sub-committee had visited the said site on 22.8.2015 and not recommended the case, <u>since it fell in the run-off zone</u>. The SEAC concurred with the visit report of sub-committee and recommended the case for rejection.</p> <p>The Committee felt that under the circumstances, it was appropriate the site be visited again by the following sub-committee on 26.5.2016 at 11am-</p> <p>1. Shri. T.C.Benjamin, Chairman</p> <p>2. Shri. Hiremath, Member</p> <p>3. Dr. R. Dod, Member</p> <p>4. Shri. Joy Thakur, Scientist II, Deptt. of Environment, GoM</p>	Deferred for site visit.

Previous consideration: The 128th Meeting held on 2nd, 3rd & 4th June, 2016

Decision: The Committee carefully went through the site visit report of Sindhudurg stone quarries and noted its contents:

1. The discussion on M/s. Nanu Industries and M/s. Alcon industries may be taken up after receiving following documents-
 - i. Report from Senior Geologist, GSDA, Sindhudurg regarding the location specific geo-hydrological regime of the quarries.
 - ii. Report from consultant approved by Nanu regarding engineering solutions to ensure that the stability of slopes and integrity of ground water and surface water are not compromised. (Only for Nanu Industries).

The Committee also requested Member Secretary, SEAC-I to inform the Member Secretary, SEIAA to hold the proposal of Kudase (S.Kumar) in abeyance till the recommendations in respect of M/s. Nanu and M/s. Alcon are finalized by SEAC-I on the basis of the site visit reports and the above mentioned submission.



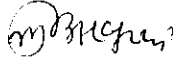
Member Secretary



Chairman

Previous consideration: The 129th Meeting held on 16th, 17th & 18th June, 2016

S. No.	Name of the Proponent, Mouz, Taluka, Land type	Gat No./ Survey No.	Area (ha)	Observation of the Committee	Recommendations
1.	Nanu Industries Parme, Dodamarg	26(p), 33/1	4.90	<p>The PP gave a detailed presentation of the compliance of various issues raised in the 117th meeting and during the site visit on 26.5.2016. The Committee made the following observations:</p> <p>1. The Senior Geologist, GSDA has submitted a letter in which she has stated that the site of the quarry has a slope of more than 15°, so that it can be characterized as 'Local Run-off Zone'. The Committee observed that the average slope of quarry face would be around 30°.</p> <p>2. The Action Plan prepared by the experts to prevent landslide and run-off was explained in detail by the PP. This action plan involves creation of benches of height 10m and width 6m. Further, the action plan envisaged that occurrence of Tension joints during quarrying should be identified and grouted with cement. It was also proposed to construct a retaining wall at the top level to prevent loose soil sliding along the rock face. The Committee deliberated on the Action Plan. It was noticed that prediction of failure of the slope and identification of tension joints have not been explained in detail. The Committee feels that this important aspect needs to be addressed so that grouting can be done in advance. Tell-tell signs of identification of tension joints need to be given.</p> <p>3. PP gave a detailed presentation of collection of run-off water and its storage in 3 stilling ponds of dimensions 80m x 20m x 8m. However, the Committee noticed that the location of stilling basins has not been shown neither in the plan nor in cross section with the result that effective collection of run-off is not depicted properly.</p> <p>4. The Committee had sought the correct demarcation of TILR with lease area. This has not been submitted by DMO.</p> <p>5. STP of capacity 1CMD has been provided for the treatment of domestic sewage. But Consent to Operate has shown a generation of 2 CMD of domestic sewage. Therefore the provision of 2 CMD may be indicated.</p> <p>6. AAQS with reference to crusher has been carried out. However distance from the quarry where the study was carried out should be submitted.</p> <p>7. The approved Mining Plan shows production of</p>	Deferred


Member Secretary

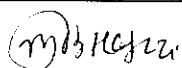

Chairman

			<p>2,88,000 Tonnes/year i.e. 70000 brass /year. The report submitted by the PP shows production of 22,500 brass/year, this difference need to be explained.</p> <p>For the compliance of the above points and to make necessary corrections, the item was deferred. The Committee will appreciate if the Expert who has made the Action Plan will remains present for the next meeting.</p>	
--	--	--	---	--

Previous consideration: The 130th Meeting held on 1st & 2nd July, 2016

Decision:

S. No.	Name of the Proponent, Mouz, Taluka, Land type	Gat No./ Survey No.	Area (ha)	Observation of the Committee	Recommendations
1.	Nanu Industries Parme, Dodamarg	26(p), 33/1	4.90	<p>The Committee deliberated on the compliance of 129th meeting as follows:</p> <p>1. The Senior Geologist, GSDA's characterizing the quarry area as 'Local Run-off Zone' was discussed at length. The PP accepted this decision of Senior Geologist, GSDA. The PP further accepted that the average slope of the quarry face was around 30°.</p> <p>2. The PP explained the various aspects of the Action Plan to prevent landslides. The Committee made the following observations on the Action Plan: a) Post excavation, the tension joints would be decided on the basis of the fold geometrics and grouting will be done accordingly. b) The retaining wall at the top level should be so designed so as to resist the forces acting on it. The retaining wall should also have proper weep holes to facilitate release of run-off. c) The quarry will be characterized by benches of height 10m x width 6m.</p> <p>3. The collection of run-off and its storage in the stilling ponds was explained. PP submitted cross section of stilling pond, pre and post quarrying and Plan. The Committee directed that the Plan and Cross section of stilling ponds should form a part of the Approved Mining Plan. The Approved Mining Plan, modified with the details of the stilling ponds need to be submitted by the PP.</p> <p>4. The DMO submitted the correct demarcation of the lease area carried out by the TILR. This</p>	For the compliances the item was deferred .



Member Secretary


Chairman

				<p>was accepted by the Committee.</p> <p>5. The PP submitted that a STP of 2 CMD capacity for the treatment of domestic sewage shall be installed. The recycled water shall be used for dust suppression.</p> <p>6. The PP submitted that the distance from quarry from where AAQS (with crusher) was carried out was 6m. A certificate of the laboratory in the regard was submitted.</p> <p>7. The approved Mining Plan shows production of 2,88,000 Tonnes/year i.e. 70000 brass /year. The report submitted by the PP shows production of 22,500 brass/year. The PP submitted that actual production will be as per the Mining Plan and the quantum submitted by the PP was a typographic mistake. The Committee desired that quantum should be calculated correctly. Shri. Hiremath, Member volunteered to work out the quantum accurately, based on the data available in the Mining Plan.</p>	
--	--	--	--	--	--

Present consideration: 132nd meeting

The Committee noted that it had recommended proposal of M/s. Nanu Industries of Village- Parme for rejection in its 110th meeting. However, SEIAA in its 97th meeting had referred the proposal back to SEAC "to give reasoned justification referring to various requirements applicable for similarly situated cases under EIA Notification 2006 and its subsequent amendments." Inherent in the above decision of the SEIAA could be the fact that in 117th meeting of SEAC, the Committee had recommended the proposal of M/s. S.Kumar Associates in Village- Kudase, which apparently was similarly situated as the present quarry. In this context it should be pointed out that the Senior Geologist, GSDA had submitted a report which stated that the quarry lay in the Recharge Zone. (*Annexure 3*)

Decision of rejection of M/s. Nanu was based on the site visit conducted by the sub-committee on 22.8.2015 (*Annexure 1*). The sub-committee comprising of Shri. Hiremath (Member) and Shri. Sehgal (Member), had recommended the case for rejection as the quarry lay in the Run-off Zone. However, since both the quarries were similarly situated, the Committee had requested SEIAA to hold the proposal of Village-Kudase [S.Kumar Associates] in abeyance.

Under these circumstances the Committee felt that the site should be revisited again on 26.5.2016 by the following sub-committee:

1. Shri. T. C. Benjamin, Chairman
2. Shri. D. A. Hiremath, Member
3. Prof. (Dr.) Ramesh Dod, Member
4. Shri. Joy Thakur, Scientist II

Accordingly site visit was conducted. The visit report is enclosed as *Annexure 2*.



Member Secretary


Chairman

In the 130th meeting, the Committee had deliberated on site visit report and compliances as follows:

1. The Senior Geologist, GSDA's characterizing the quarry area as 'Local Run-off Zone' was discussed at length. The PP accepted this decision of Senior Geologist, GSDA. The PP further accepted that the average slope of the quarry face was around 30°.
2. The PP explained the various aspects of the Action Plan to prevent landslides. The Committee made the following observations on the Action Plan: a) Post excavation, the tension joints would be decided on the basis of the fold geometrics and grouting will be done accordingly. b) The retaining wall at the top level should be so designed as to resist the forces acting on it. The retaining wall should also have proper weep holes to facilitate release of run-off. c) The quarry will be characterized by benches of height 10m x width 6m.
3. The collection of run-off and its storage in the stilling ponds was explained. PP submitted cross section of stilling pond, (pre and post quarrying) and Plan. The Committee directed that the Plan and Cross section of stilling ponds should form a part of the Approved Mining Plan. The Approved Mining Plan, modified with the details of the stilling ponds need to be submitted by the PP.
4. The DMO submitted the correct demarcation of the lease area carried out by the TILR. This was accepted by the Committee.
5. The PP submitted that a STP of 2 CMD capacity for the treatment of domestic sewage shall be installed. The recycled water shall be used for dust suppression.
6. The PP submitted that the distance from quarry from where AAQS (with crusher) was carried out was 6m. A certificate of the laboratory in the regard was submitted.
7. The approved Mining Plan shows production of 2,88,000 Tonnes/year i.e. 70000 brass /year. The report submitted by the PP shows production of 22,500 brass/year. **The PP submitted that actual production will be as per the Mining Plan and the quantum submitted by the PP was a typographic mistake.** The Committee desired that quantum should be calculated correctly. Shri. Hiremath, Member volunteered to work out the quantum accurately, based on the data available in the Mining Plan.

The PP also submitted a report of the subject specialist Shri. N. Somasundaram, Sr. Hydrogeologist (Rtd.), Water Resources Deptt. Govt. of Goa in which he has prescribed elaborate steps to contain adverse impact of quarrying. Copy of the report is enclosed as **Annexure 4**. The Committee observed that the subject specialist had come up with the following prescriptions:

- a. Run off management- it is proposed to manage enhanced run off due to hill cutting and quarrying. It is proposed to construct 3 water conservation ponds/stilling ponds: one at the foot of quarry (size 80m x 20m x 8m). (Ultimately this pit will reach 25m below ground level of the quarry) and another two located downstream each having dimensions of 15m x 7.5m x 4m.
- b. Silt management- silt potential is limited due to meager quantity of overburden soil. However, silt can flow during monsoon to Tilari River from soil disturbed during quarrying, soil dumped near quarry and dust generated during quarry operation. Besides providing settling ponds to break run off. Stilling basins have been provided at the base of drain before leaving the property and clean water is let to Tilari River.



Member Secretary



Chairman

c. Ground water management-

Quarry area is located on hill slope near peak (near the surface water and Ground Water Divide). For the given Hydro geological set up of the area there are no aquifer system (Water table aquifer/Perched aquifer and Semi-confined to confined aquifer, which can hold and yield water.

Basically in quarry area (lease area) about 15percent of rain water gets infiltrated during monsoon and migrates downstream as interflow at the contact of overburden and may recharge ground water system downstream. Reduction in infiltration of rainfall gets compensated by run off control measures proposed.

Being undulating Hilly terrain, at present there is no ground water development in the watershed. Scope for ground water development in future is also remote due to non-availability of cultivable lands in immediate vicinity. As such availability of ground water and demand is limited. The quarrying activity may not adversely affect ground water potential of the watershed. However run off control measures proposed would enhance ground water recharge opportunity.

Storing of rain water in abandoned quarry would serve as ground water recharge structures to aquifer associated with cracks and joints in hard rock besides serving as rainwater harvesting structures.

Seepage from Tilari dam located 9Km upstream of the water shed and returns flow from canal Irrigation has enhanced water resources potential of the Tilari sub -basin substantially.



Member Secretary



Chairman

d. slope stability management-

As there is no significant geological discontinuity at Quarry site, slip circle analysis is not passible and not required as the rock cut slopes are very stable, There may not be any adverse impact of land slide / soil creep due to quarrying activity

A. As recommended by the committee for Basaltic terrain of Thane district the benches have been cut keeping in view of having ultimate bench height of 10mtrs and bench width of 6 mtrs. (Plate 2, 3) If approved, half benches shall be shaped.

B. Occurrence of Tension joints if any in future due to quarrying activity shall be grouted with cement to prevent entry of water during monsoon.

C. It is proposed to construct retaining wall at the boundary of top most benches at vulnerable locations to prevent soil creep. (Plate 2.4)

d. Reject dumps consisting of rock fragments murrum and soil) located downstream of quarry have been rolled layer by layer and compacted, In future also it is proposed to do the same,

f. It is proposed to maintain 1:1 Slope with benches where ever required .

g. It is proposed to grow grass and trees to stabilize the slope of reject dumps..

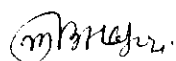
Final observations and conclusions of the Committee:

The Committee agreed that the construction of benches and retaining wall can ensure the stability of slope to prevent landslides and soil creep.

As far as the surface water management/run-off management/ silt management/ ground water management, the opinion of Shri. C. I. Sambutwad (Member) was taken (enclosed as ***Annexure 5***), in which he has observed as follows-

- a) For run-off calculation, PP has considered only quarry lease area i.e. 5 ha. It should be the overall catchment around the lease area.
- b) The stilling basin features a natural end weir and not a weir designed through engineering calculations considering the maximum (design) run-off possible. Therefore the sufficiency of end weir is not established.
- c) There is 160m high cutting at the ultimate excavation. But for first five year there is 115m high cutting i.e there will be 160m water fall at ultimate excavation.

Shri. Hiremath (Member) has objected to the quantum of stone quarry to be mined as per the Mining Plan. He has worked out the quantum as 3,96,480 Tonnes/year as against 2,88,000 tonnes/year in the Mining Plan. The DMO Sindhudurg [vide a letter dated 20.7.2016] (***Annexure 6***) pointed out that, Shri. Hiremath had done his calculations based on the cross section attached to the hydro-geological



Member Secretary


Chairman

report as against the approved modified Mining Plan. Therefore the quantum indicated in the Mining Plan is correct.

Shri. Hiremath had further submitted his opinion in which he has not recommended the quarry for grant of EC (*Annexure 7*).

The Committee considered all the above opinions and views and came to the following conclusions:

- I. The Kudase quarry (S.Kumar Associates) was recommended on the basis of the inputs before the Committee i.e. the quarry is located in the Recharge Zone (*Annexure 3*). In the light of present findings it will be necessary to revisit the proposal of S. Kumar Associates and obtain the correct certificate from the Senior Geologist, GSDA Raigad. The SEIAA may be requested to refer the proposal of S. Kumar Associates (Kudase) back to the SEAC-I for the reappraisal.
- II. The Committee considered the views of the Expert Members Shri. Hiremath and Shri. Sambutwad. Shri. Hiremath has categorically opined that EC should not be recommended because hill cutting in Run-off Zone was involved. Shri. Sambutwad has rebutted the solutions offered by the Expert on the behalf of the PP regarding the stilling ponds, on the grounds that the stilling ponds would be inadequate and structurally deficient resulting in uncontrolled run-off and soil erosion detrimental to the geomorphological regime of the area.
- III. The Committee recalled that similarly placed quarries were not recommended for EC by the Committee earlier.
- IV. A study was conducted by the Committee for Thane District on quarrying involving hill cutting, and certain guidelines were prescribed by the Committee foremost of which was that quarrying involving hill cutting in the run-off zone should not be recommended for EC. The Committee deems it expedient to abide by these guidelines in the interest of environment preservation.

By virtue of the above conclusions, it was decided that it **would not be proper to change the earlier decision of the Committee**. Therefore the Committee decided to **recommend the proposal for rejection**.

2. M/s. Alcon Industries-

Previous consideration: The 110th Meeting held on 10th & 11th September, 2015

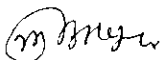
Decision: The Committee observed, interalia, that the quarry lies in the Run-off zone thereby affecting the water retention capacity of the hilly area. The Committee further observed that the quarry is within 4.9km of Maharashtra- Goa boundary.

The Committee discussed the report of team and after considering the adverse impact on the environment due to the quarrying, decided to recommend the proposal for **rejection**.

Previous consideration: The 127th Meeting held on 12th & 13th May, 2016

Decision:

S. No.	Name of the Proponent, Mouz, Taluka, Land type	Gat No./ Survey No.	Area (ha)	Observation of the Committee	Recommendations
--------	--	---------------------	-----------	------------------------------	-----------------



Member Secretary



Chairman

1.	M/s. Alcon industries Talekhol, Dodamarg	372 (p)	1.60	<p>The Committee noted that SEIAA in its 97th meeting had referred the proposal back to SEAC to give reasoned justification referring to various requirements applicable for similarly situated cases under EIA Notification 2006 and its subsequent amendments.</p> <p>The Committee observed that the sub-committee had visited the said site on 22.8.2015 and not recommended the case, <u>since it fell in the run-off zone</u>. The SEAC concurred with the visit report of sub-committee and recommended the case for rejection.</p> <p>The Committee felt that under the circumstances, it was appropriate the site be visited again by the following sub-committee on 26.5.2016 at 11am-</p> <ol style="list-style-type: none"> 1. Shri. T.C.Benjamin, Chairman 2. Shri. Hiremath, Member 3. Dr. R. Dod, Member 4. Shri. Joy Thakur, Scientist II, Deptt. of Environment, GoM 	Deferred for site visit.
----	---	---------	------	--	--------------------------

Previous consideration: The 128th Meeting held on 2nd, 3rd & 4th June, 2016

Decision: The Committee carefully went through the site visit report of Sindhudurg stone quarries and noted its contents:

1. The discussion on M/s. Nanu Industries and M/s. Alcon industries may be taken up after receiving following documents-
 - i. Report from Senior Geologist, GSDA, Sindhudurg regarding the location specific geo-hydrological regime of the quarries.
 - ii. Report from consultant approved by Nanu regarding engineering solutions to ensure that the stability of slopes and integrity of ground water and surface water are not compromised. (Only for Nanu Industries).

The Committee also requested Member Secretary, SEAC-I to inform the Member Secretary, SEIAA to hold the proposal of Kudase (S.Kumar) in abeyance till the recommendations in respect of M/s. Nanu and M/s. Alcon are finalized by SEAC-I on the basis of the site visit reports and the above mentioned submission.



Member Secretary



Chairman

Previous consideration: The 129th Meeting held on 16th, 17th & 18th June, 2016

Decision:

S. No.	Name of the Proponent, Mouz, Taluka, Land type	Gat No./ Survey No.	Area (ha)	Observation of the Committee	Recommendations
1.	M/s. Alcon industries Talekhol, Dodamarg	372 (p)	1.60	The PP requested for postponement of discussion since modifications have been proposed by the PP in the Mining Plan.	Deferred

Previous consideration: The 130th Meeting held on 1st & 2nd July, 2016

Decision:

S. No.	Name of the Proponent, Mouz, Taluka, Land type	Gat No./ Survey No.	Area (ha)	Observation of the Committee	Recommendations
1.	M/s. Alcon industries Talekhol, Dodamarg	372 (p)	1.60	<p>The Committee deliberated on the compliance of 129th meeting as follows:</p> <p>1. The Senior Geologist, GSDA's characterizing the quarry area as 'Local Run-off Zone' was discussed at length. The PP accepted this decision of Senior Geologist, GSDA. The PP further accepted that the average slope of the quarry face was around 30°.</p> <p>2. The PP explained the various aspects of the Action Plan to prevent landslides. The Committee made the following observations on the Action Plan: a) Post excavation, the tension joints would be decided on the basis of the fold geometrics and grouting will be done accordingly. b) The retaining wall at the top level should be so designed so as to resist the forces acting on it. The retaining wall should also have proper weep holes to facilitate release of run-off. c) The quarry will be characterized by benches of height 10m x width 6m.</p> <p>3. The collection of run-off and its storage in the stilling ponds was explained. PP submitted cross section of stilling pond, pre and post quarrying and Plan. The Committee directed that the Plan and Cross section of stilling ponds should form a part of the Approved Mining Plan. The Approved Mining Plan, modified with the details of the stilling ponds need to be submitted by the PP.</p>	For the compliances the item was deferred .



Member Secretary



Chairman

Present consideration: 132nd meeting

The Committee noted that it had recommended proposal of M/s. Alcon Industries of Village- Talekhol for rejection in its 110th meeting. However, SEIAA in its 97th meeting had referred the proposal back to SEAC "to give reasoned justification referring to various requirements applicable for similarly situated cases under EIA Notification 2006 and its subsequent amendments." Inherent in the above decision of the SEIAA could be the fact that in 117th meeting of SEAC, the Committee had recommended the proposal of M/s. S.Kumar Associates in Village- Kudase, which apparently was similarly situated as the present quarry. In this context it should be pointed out that the Senior Geologist, GSDA had submitted a report which stated that the quarry lay in the Recharge Zone. (*Annexure 3*)

Decision of rejection of M/s. Alcon quarry was based on the site visit conducted by the sub-committee on 22.8.2015 (*Annexure 1*). The sub-committee comprising of Shri. Hiremath (Member) and Shri. Sehgal (Member), which has recommended the case for rejection as the quarry lay in the Run-off Zone. However, since both the quarries were similarly situated, the Committee had requested SEIAA to hold the proposal of Village-Kudase [S.Kumar Associates] in abeyance.

Under these circumstances the Committee felt that the site should be revisited again on 26.5.2016 by the following sub-committee:

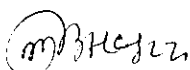
- i. Shri. T. C. Benjamin, Chairman
- ii. Shri. D. A. Hiremath, Member
- iii. Prof. (Dr.) Ramesh Dod, Member
- iv. Shri. Joy Thakur, Scientist II

Accordingly site visit was conducted. The visit report is enclosed as *Annexure 2*.

Shri. Hiremath had further submitted his opinion in which he has not recommended the quarry for grant of EC (*Annexure 7*).

The Committee considered all the above opinions and views and came to the following conclusions:

- I. The Kudase quarry (S.Kumar Associates) was recommended on the basis of the inputs before the Committee i.e. the quarry is located in the Recharge Zone (*Annexure 3*). In the light of present findings it will be necessary to revisit the proposal of S. Kumar Associates and obtain the correct certificate from the Senior Geologist, GSDA Raigad. The SEIAA may be requested to refer the proposal of S. Kumar Associates (Kudase) back to the SEAC-I for the reappraisal.
- II. The proposed quarry will involve hill cutting in the run-off zone and will result in unstable slopes and uncontrolled run-off.
- III. The Committee recalled that similarly placed quarries were not recommended for EC by the Committee earlier.
- IV. A study was conducted by the Committee for Thane District on quarry involving hill cutting, and certain guidelines were prescribed by the Committee foremost of which was that quarrying involving hill cutting in the run-off zone should not be recommended for EC. The Committee deems it expedient to abide by these guidelines in the interest of environment preservation.



Member Secretary



Chairman

By virtue of the above conclusions, it was decided that it **would not be proper to change the earlier decision of the Committee**. Therefore the Committee decided to **recommend the proposal for rejection**.

Site visit report - "Annexure I"

Visit to Stone Quarries in Sindhudurg District.

[Ref: Minutes of 107th & 108th SEAC-1 Meeting]

Introduction: It was decided in the 107th & 108th SEAC-1 meeting that a team comprising of Shri D. A. Hiremath, Shri Balbir Sehgal, Members SEAC-1 assisted by Mining officials of Sindhudurg district shall visit the sites of following quarries to ascertain whether the proposed quarrying activity will compromise the ecological fragility of the area, with due consideration of a) stability of slopes b) preservation of runoff zone and aquifers c) biodiversity of the area and d) natural beauty and serenity of the area.

Sr No	Name of the PP.	Village	Taluka	Sy No	Area ha	Remark
	Jagannath P. Sinnari.	Degve	sawantwadi	77/1A	4.50	Recharge Zone
	Nanu Industries ✓	Parne.	Dodamarg.	26(p), 33/1	4.90	Recharge Zone
	Akon Developers ✓	Tatekhol.	Dodamarg.	372 (p)	1.60	

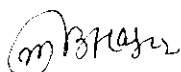
All the above quarries were visited on 22nd august 2015. Talsildar Sawantwadi Dodamarg, Senior Geologist from GSDA (Mrs Rashmi Kadam) and Field Officer from MPCB and all the three project proponents were also present during the field visit. We thank all the Govt officials who made all arrangements for our field visit.

[Mining Plans of above proposed quarrying have been approved by the Directorate of Geology & Mining, Govt of Maharashtra]

A Jagannath . P. Sinnari: Village: Degve, Survey NO 77/1A.

In the 104th SEAC-1 meeting it was noted that the Hon'ble NGT(Pune) vide its Order dated 12th March 2015 had directed that the case should be taken up for Environment appraisal. The Committee had desired that the certificate of GSDA should be made available before appraisal. GSDA certificate indicated that the proposed quarry is in the recharge zone.

Proposed quarry is located NE of Banda and can be accessed by 7Km Tar/kutchra road. The case was earlier considered in the 102nd SEAC-1 meeting. The Committee had noted that Hon'ble NGT Pune vide its order dated 12th



Member Secretary



Chairman

March 2015 had directed that this case should be taken up for appraisal.
Degve is an ESA village under draft notification issued by the MOEF New Delhi.

Site visit:

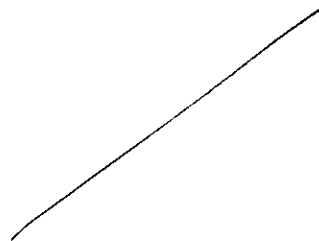
- a). Highest and lowest part of the quarry is located on the NE and SE side respectively. Level difference being 50m over a distance of 280m. PP has obtained land owners consent and Gram Panchyat NOC for starting quarrying operations. PP has also applied for grant of QL to the Collector. The proposed quarry area is in the recharge zone and GSDA has also certified accordingly.
- b) Small portion of the area has been worked in the past by and has bench height of about 5 to 6m.
- c). Village Degve is located 5.48 Km from the interstate boundary with Goa.
- d). The quarry is far away from the public roads, water bodies and gaathan etc
- d). working of the quarry may not be an sore to the public since the project site is located far away from the habitation and public road.

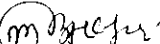
Visiting team recommends for grant of E C to the PP. ✓

B) M/S Nanu Industries. Village: Parme, Survey NO 26 (p), 33/1. Proposed quarry is located about 12 Km NE of Dodamarg and can be accessed via Sasoli Village on SH 124. Collector, Sindhudurg has granted Quarry lease for 5 years from 24/05/ to 23/05/2016 over an area of 10.19 ha. Now the PP has surrendered an area of 5.29 ha from above two survey numbers and intends to retain 4.90 ha and accordingly prepared a mining plan which has been duly approved by the DGM Nagpur. However, the PP has not furnished survey number wise break up of area to be retained. GSDA has certified that the quarrying area falls under the recharge zone.

Visit to the site :

- a) Quarry forms foot hills of Western Ghat. Highest and lowest portion of quarry is on the NW and SE sides with elevations 380m and 250m respectively from MSL. Thus the level difference is 130m from top to bottom portion of the




Member Secretary



Chairman

lease hold area. The area is being worked since last 15 to 20 years. Lease area is obviously in the runoff zone and not recharge zone as indicated by the GSDA.

b). Present working and benches proposed for future working suggest that the stability of slope is under threat and as a result rock slides are likely to occur due to cutting of hill slopes. Mine workers are always under danger from safety point of view. No benches are maintained, vertical cut of about 30m can be seen on the face of the quarry. Present production of ROM is 3.20 Lakh Tonnes along with about a Lakh Tonnes of OB generated annually. No scientific mining is done.

c). Quarry is located about 500m from Tillari river & Tillari irrigational canal flowing in the southern part of the area. However, crusher activity located further SE is within 200m from the canal and the river. Huge overburden dumps created have not been stabilised nor garland canals been provided to avoid washing of mud and soil in to the streams & river.

d). The area all around is lush green with rich biodiversity.

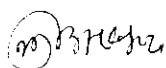
Project has not yet been appraised by the Committee, however the visiting team recommends not to grant E C to the proposed ongoing project.

C) Alcon Developers, Village: Talekhol, Survey NO: 372(p). The proposed quarry is located about 6 Km ESE of Dodamarg. It is new project and PP has submitted application grant of quarrying lease for 5 years to the collector. PP has obtained the surface rights from the owner of the land. Gram panchayat has accorded permission for quarrying for one year.

Visit to the site:

a). Quarrying is in a hilly portion. Highest and lowest part of the proposed quarry is on the north and SW sides with elevations 246m and 114m accordingly from MSL. Thus the level difference is 132m. Proposed quarrying project is in the runoff zone.

b). Examination of cross sections and working plans as shown in the mining plan and field visit suggest that the stability of slope is under threat. There is every



Member Secretary



Chairman

possibility of rock slides along the slopes of the quarry in to the valley portions.

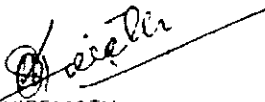
c). Interstate boundary along Goa State is appears within 4.90 Km from the project site.

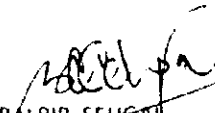
The proposed project has not yet been appraised by the Committee. However, the visiting team recommends that the proposed project should not be considered for grant of E.C.

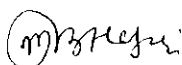
During the time of visit several working quarries were seen on hill slopes from long distances, which were obviously in the runoff zone. District administration should be directed to examine such sites in Sawantwadi and Dodamarg talukas of Sindhudurg district.

Enclosures:

1. Photographs.
2. Google maps.
3. Mining plans approved by the DGM Nagpur
4. GSDA certificate.


D.A. HIREMATH
Member SEAC-1


BALBIR SEHGAL
Member SEAC-1


Member Secretary


Chairman

Site visit report-"Annexure 2"

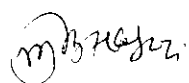
Site Visit Report of Sindhudurg stone quarries

1. **Introduction:** Pursuant to the decision taken by the Committee in its 107th and 108th meetings, a team comprising of Shri. D. A. Hiremath and Shri. Balbir Singh Sehgal had visited the following stone quarries:

Sr.no.	Name of the PP	Village	Taluka	Survey no.	Area (ha)
1.	Nanu Industries	Parne	Dodamarg	33/1& 26/0	4.90
2.	Alcon Developers	Talekhol	Dodamarg	372(p)	1.60

Based on the report of the said visit, the Committee in its 110th meeting had decided to recommend the above quarries for rejection. The SEIAA in its 97th meeting decided to refer back the proposals for reconsideration of the Committee. Accordingly, the proposals were taken up in the 127th meeting, when it was decided that a Sub-committee comprising of Shri. T.C Benjamin Chairman, Shri. D.A. Hiremath, Dr. Ramesh Dod Members, SEAC-1 and Shri. Joy Thakur, Scientist II of Environment Deptt., Govt. of Maharashtra decided to visit sites for a realistic assessment of the proposals.

2. **Discussions with the Senior Geologist, GSDA:** The Senior Geologist, GSDA, Sindhudurg District clarified that the certificate mentioning that both quarries belonged to the Re-charge Zone were issued on the basis of village wise categorization of the geo-hydrological zones carried out by the GSDA. Senior Geologist admitted that within a given village location specific variations can occur, which can only be verified by the site visit.
3. **Discussion with the DMO Sindhudurg District:** It was observed by the team while inspecting the concerned file with the DMO, that demarcation maps certified by the TILR were not available for scrutiny. DMO agreed to procure the TILR demarcated maps which are crucial to determine the lease boundaries. DMO further brought to the notice that lease was granted to M/s. Nanu Industries till 23/05/2016 for 10.19 ha. Mining plan was prepared for 4.90 ha. The surrender request for remaining area of 5.29 ha is still pending with the Collector Sindhudurg. DMO promised to expedite the sanction of surrender of 5.29 ha.
4. **Visit to Nanu Industries at Village: Parne, Taluka: Dodamarg:** The team accompanied by the Senior, GSDA, DMO, a representative from the Consultant and the PP visited the quarry site from 10 am to 11.15 am.


Member Secretary


Chairman

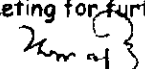
The sub-committee made the following observations:

- i) The proposed quarry will clearly result in hill cutting and lies in the Run-off zone. The Senior Geologist, GSDA concurred with this and promised to give a report in this regard. The PP suggested that certain remedial measures can be taken up to nullify the adverse impacts of quarrying in the Run-off zone involving heavy hill cutting. These steps inter alia could involve provision of benches, provision of drainage channels and storage tanks. The PP was requested to give comprehensive engineering solutions to ensure that the stability of slopes and integrity of the ground water / surface water are not compromised. The PP agreed to give a report in this regard.
- ii) The crusher situated in the vicinity of the quarry does not have any dust suppression mechanism. This needs to be addressed sufficiently. Team observed that most of the Consent to Operate conditions was not complied with in this regard.
- iii) A STP of suitable capacity needs to be installed to treat canteen waste water and domestic sewage and treated effluents should be recycled for dust suppression.

5. Visit to S.Kumar Associates quarry at Village Kudase, Taluka Dodamarg: The team visited the adjacent quarry site at Kudase and observed that the conditions similar to M/s. Nanu Industries were prevailing in this site also. However, GSDA had given a certificate indicating that this site was in the Re-charge Zone, on the basis of which the Committee had recommended it for EC. Having seen the site, the sub-committee decided that since the Nanu Industries site and S. Kumar's site in Kudase were similarly situated, it would be proper to apply the same yardstick to both the quarries. Accordingly the team requested the Member Secretary, SEIAA to hold the Kudase proposals in abeyance till the Nanu matter was resolved.

6. Visit to Alcon Developers at Village Talekhol, Taluka Dodamarg: The team observed similar conditions of potential hill cutting and vitiation of Run-off zone prevailing in this site also. Therefore similar instructions as given to the PP of Nanu Industries were given to the PP of this proposal.

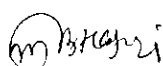
Conclusion: The team decided to place this report before the Committee in its 128th meeting for further decision. The visit ended by 2pm.


T.C. Benarath
Chairman

D.A. Hiremath
Member

Ramesh Dod
Member


Joythakur
Sci II (Environment Deptt.)


Member Secretary


Chairman

"Annexure 5"

Note on - Stilling Basin.

Hanu Industries, Majra-Parmey Tq. Dadamerg Dist. Sindhodurg

Stilling Basin:

During the presentation in 130th meeting PP Submitted that Stilling Basin size 80x20x8m will regulate the surface runoff. (Prevention of Flooding due to enhanced runoff)


On this statement following are observations.


- i) For runoff calculation PP has considered only quarry lease area i.e. 510 hac. It should be the over all catchment around the Lease area.
- ii) From Plate No. 12, There is 160m high cutting in benches at ultimate excavation. But for first five year there is 115m high cutting i.e. There will be 160m water fall at ultimate excavation and 115m water fall after 5 years excavation.
- iii) There is natural End wier after basin, it is not designed.
- iv) The size of stilling basin is 80x20x8m at the end of 5 year excavation.

~~Observation.~~

From the above observation it is seen that the 80x20x8m size is pond and not stilling basin. The stilling basin it to be designed, considering water fall of 160m at ultimate stage and 115m after 5 year stage.

As There is fall of 160m, 115m The EDA (Energy dissipation Arrangement) is to be designed as per The USBR.


(C.I. Sambanthud)
member SEAC-1



Member Secretary


Chairman

"Annexure 6"



Government of Maharashtra
District Collector & District Magistrate Office, Sindhudurg
Main Administrative Building, Ground Floor, Gallery No.122, Mining
Branch, Oros, Sindhudurgnagari- 416812

Khani/20/54/2015

Sindhudurg, Date:-20/7/2016

To,

✓ The Member Secretary,
SEAC - I, 15th Floor,
Environment Department,
Mantralaya, Mumbai.

**Sub- Regarding Nanu Industries Quarry in S.No.26/0(Part) &
33/1(Part) in Parme Village of Dodamarg Taluka of
Sindhudurg District.**

Ref- 131st meeting of SEAC-I held on 15/7/2016.

It was told in the meeting by the Chairman Mr. T.C. Benjamin to verify the reserves calculated by Shri D. A. Hiremath, Honourable Member of the SEAC-I regarding the Production shown by Nanu Industries in their Modified Mining Plan.

It was noticed that Shri. Hiremath had done the reserves calculation on the cross section plate no. 2.4, which was attached to the hydro geological report submitted to the committee by Shri N. Somasundaram on behalf of Nanu Industries. For the calculation of the reserves plate no 7 of approved modified mining plan should have been used instead of plate no. 2.4. of hydro geological report.

The geological reserves estimated under chapter-3 and yearwise development figures given under chapter-4 of the modified mining plan is correct and same is approved by competent authority.



Arnel
District Mining Officer,
(Sindhudurg)

M. B. K. K.

Member Secretary

Thang

Chairman

"Annexure 7"

Opinion regarding Quarry Leases of M/s. Nanu Industries located at Village Parme and M/s. Alcon Industries at Village Talekhol in Taluka Dodamarg, District Sindhudurg, Maharashtra State.

Ref: 1. Visit Report of Shri D A Hiremath, Members SEAC -I on dated 28th August 2015.

2. Visit Report of Shri T C Benjamin Chairman, Shri D A Hiremath & Dr Dod, Members, SEAC-I & Shri Joy Thakur Scientist, Environment.

3. Minutes of 130th meeting.

Opinion: 1. Both the quarries are located in the Runoff zone and involves hill cutting. (Refer revised GSDA letter)

2. Stilling ponds proposed are not practically feasible. Final opinion in this regard may be obtained from Shri Sambutwad, Member SEAC -I.

3. Production figures proposed for the first five years in the Mining plan of M/s. Nanu Industries do not match with calculations done by me.

4. Mining plan submitted by M/s. Alcon has many flaws ~~was submitted as such~~ the same.

5. SEAC -I Committee has studied Quarries located in the Thane District involving hill cutting and recommended not to allow the quarrying involving hill cutting and Run off Zones elsewhere in the State of Maharashtra.

6. SEAC-I Committee has been consistently following guidelines given in the Hill Cutting Report.

Thus, I personally feel that SEAC-I should not recommend SEIAA for grant of EC to above two quarries.



Member Secretary



Chairman

Item no. 14	Minor Minerals (stone) Nandurbar (01) [new]
--------------------	--

The proposal was considered under category 1(a)-B2 of the schedule of EIA Notification 2006. The brief information submitted by the PP and decision of the Committee are depicted below:

S. No.	Name of the Proponent, Mouz, Taluka, Land type	Gat No./ Survey No.	Area (ha)	Observation of the Committee	Recommendations
1.	Executive Engineer, Daheli Medium Project Nandurbar Medium Project Division Dongripada, Akkalkuwa	44 Part	6.2	The proposed quarry is situated beyond 200m of habitations, water bodies, roads and public structures. The AAQS shows that GLCs were within prescribed limits with crusher in operation. No hill cutting was involved. Approved Mining Plan has been submitted and found to be in order. All aspects of Environmental Impact were considered and found to be within limits.	Recommended for EC subject to the following conditions- 1. Annexure A 2. The crusher will be properly covered to prevent dust pollution. 3. Trees will be planted along the lease boundary. 4. Local (Adivasi) people should be given employment in the quarry.

Item no. 15	Minor Mineral (stone) Yavatmal (1) [new]
--------------------	---

PP remained absent hence **deferred**.

Item no. 16	Minor Mineral (stone) Gondia (1) [new]
--------------------	---

The Committee considered the proposal under category 1(a)-B of the schedule of EIA Notification 2006. Area of the proposed quarry for which EC was sought is 9.32ha. The Committee noted that out of this 9.32 ha, 4.95 ha comes in Forest area. The permission for non-forest use has been sought from the Appropriate Authority and is under process. The Committee is of the view that this permission should be obtained first so that Committee can give due cognizance to conditions laid down by the Forest Deptt. Therefore the item is **deferred**.



Member Secretary



Chairman

Item no. 17	M/s. INCHEM Laboratories Pvt. Ltd. (Formerly known as Sai Organics Pvt. Ltd.) Proposed manufacturing of Bulk Drugs and its Intermediates at Plot No.C-7, Krushnur MIDC, Tal. Naigaon, Distt.Nanded
--------------------	---

Deferred for obtaining the approved minutes of the SEIAA on the subject.

Discussion Item 3	Discussion on site visit report:
------------------------------	---

1. **M/s. Novozymes South Asia Pvt. Ltd.**

The Committee went through the visit report (enclosed as *Annexure C*). The visit report shall be considered when the item is placed in the agenda.

"Annexure C"

Visit report: M/s. Novozymes South Asia Pvt. Ltd.

Date- 27.8.2016


Pursuant to the decision taken in the 131st meeting, a sub-committee comprising of following members visited the site on 27.8.2016-

1. Shri. T. C. Benjamin, Chairman
2. Prof. (Dr.) Ramesh Dod, Member
3. Shri. Balbir H. Sehgal, Member

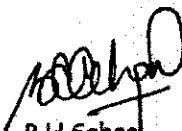
The sub-committee visited the site and observed that site should change for following reasons:

- I. There is a nalla passing through the site which bifurcates the plot into two.
- II. Nalla is likely to be contaminated by process effluents and during rainy season nalla will flood the entire premises.

The PP was agreed to discard the present plot and acquire a new land.

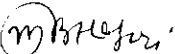

T. C. Benjamin


Ramesh Dod


B.H. Sehgal

2. **Pria CETP, MIDC Patalganga**

The Committee went through the visit report (enclosed as *Annexure D*) and letter to CEO MIDC and noted their contents.


Member Secretary


Chairman

"Annexure D"

Visit report- M/s. Pria CETP at MIDC Patalganga

Date- 27.8.2016

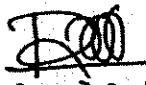
Pursuant to the decision taken in the 131st meeting, a sub-committee comprising of following members visited the site on 27.8.2016-

1. Shri. T. C. Benjamin, Chairman
2. Prof. (Dr.) Ramesh Dod, Member
3. Shri. Balbir H. Sehgal, Member

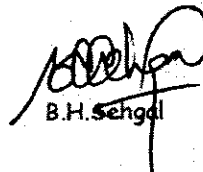
The sub-committee observed that the CETP at Patalganga has been non-functional for the past 7 to 8 months and discharging untreated effluents into Patalganga River. Considering the non-functionality of CETP the sub-committee decided to inform CEO [MIDC], Member Secretary [MPCB] and Principal Secretary [Environment Deptt. GoM] regarding urgent need to rehabilitate the CETP and bring it up to requisite standard. The copy of letter in this regard is enclosed.



T. C. Benjamin



Ramesh Dod



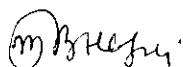
B.H. Sehgal

Discussion Item 4	Correction in the Minutes of M/s. Amri India and M/s. Finechem
------------------------------	---

The PP brought to the notice of the Committee that certain mistakes have been found in the project parameters in the relevant minutes of the meeting of the Committee, regarding-

1. Capacity
2. Water requirement
3. Hazardous waste
4. Thermopack capacity
5. Spent oil waste
6. Fuel details
7. Product list

During discussion it was borne out that mistakes occurred while submitting details to the Environment Department by the Consultant. The Consultant should submit the correct details duly counter signed by the PP so that the Committee can take cognizance of the same and make further corrections as required.



Member Secretary



Chairman

Discussion Item 5	Proposed site visits
------------------------------	-----------------------------

The Committee decided to visit the following industries scheduled as follows:

1. **M/s. Ria Organics Pvt. Ltd.** at D-26/2, MIDC Kurkumbh, Daund, Pune on **11th August, 2016**
2. **M/s. Shagun Chemicals in affiliation with Anand Chemicals & Akash Industries** at shed no. 15, 33 & 34 MIDC Kurkumbh, Daund, Pune on **11th August, 2016**
3. **M/s. KUKADI SAHAKARI SAKHAR KARKHANA LTD.** at Gut No. 91 & 92, Pimpalgaon Pisa, Tal. Shrigonda, Dist. Ahmednagar on **18th August, 2016**



Member Secretary



Chairman

"Annexure A"

The Specific and General conditions applicable for Mining of Stone:

Specific conditions:

1. Provisions stipulated in Maharashtra Minor Minerals Extraction (development and Regulation) Rules 2013 shall be strictly adhered to.
2. District Collector and District Mining officer will be held responsible personally for non-compliance of the conditions stipulated in the Environmental clearance and shall be liable for legal action under Environment (Protection) Act of 1986.
3. District Collector will take bank guarantee of Rs. 2,00,000/- OR upto 2% of the annual royalty, whichever is higher, for the given lease from the lease holder to ensure the compliance of the conditions stipulated. In case of violation of stipulated conditions by project proponent bank guarantee so obtained shall be forfeited and legal action under the law should be initiated against such project proponent.
4. It shall be ensured that there is no fauna dependent on the areas close to mining for its nesting.
5. To prevent dust / particulate matter pollution, the lease holder shall take up tree plantation in an area 10 m from the boundary of the leased area and also on either side of the road leading to the quarry from the already surfaced road.
6. District Collector and Project proponent to ensure that there is no violation of the Supreme Court order given in related matters.
7. District Collector shall prepare closure plan and get it approved by the competent authority for all abandoned mines in the District.

General conditions:

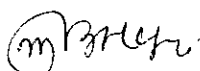
1. Precise mining area will be jointly demarcated at site by officials of Mining/Revenue department prior to mining operations for all proposals under consideration. Such site plan, duly verified by competent authority shall be submitted to Environment Department.
2. All necessary statutory clearances shall be obtained before start of mining operations.
3. Mining / loading shall be limited to day hours' time only. The quarrying / loading shall not be done during night hours.
4. No mining shall be carried out in the safety zone of any bridge and/or embankment.
5. No mining shall be carried out in the vicinity of natural/ manmade archeological sites.
6. The lease holder shall obtain necessary prior permission of the competent authorities for drawl of requisite quantity of water (surface water and groundwater), if required for the project.
7. Waste water, if any, shall be properly collected and treated so as to conform to the standards prescribed by MoEF/CPCB.
8. No wildlife habitat will be infringed.
9. Where, the quarrying is in a hilly terrain hill cutting shall be allowed only in the recharge zone to be identified by the officials of GSDA.
10. Environmental clearance is subject to obtaining clearance under the Wildlife (Protection) Act, 1972 from the competent authority, if applicable to this project.
11. Green belt development shall be carried out considering CPCB guidelines including selection of plant species in consultation with the local DFO/Horticulture Officer.
12. Parking of vehicles should not be made on public places.
13. Transportation of materials shall be done by covering the trucks / tractors with tarpaulin or other suitable mechanism so that no spillage of mineral/dust takes place.
14. Appropriate mitigation measures shall be taken to prevent any kind of pollution in consultation with the Maharashtra Pollution Control Board. It shall be ensured that there is no leakage of oil and grease from the vehicles used for transportation.
15. Vehicular emissions shall be kept under control and regularly monitored. The mineral transportation shall be carried out through the covered trucks only and the vehicles carrying


Member Secretary


Chairman

- the mineral shall not be overloaded.
16. Special Measures shall be adopted to prevent the nearby settlements from the impacts of mining activities. Maintenance of roads through which transportation of minor minerals is to be undertaken, shall be carried-out regularly.
 17. Dispensary facilities for first-aid shall be provided at site.
 18. Occupational health surveillance program of the workers should be undertaken periodically.
 19. Provision shall be made for housing the workers at site, if required, with all necessary infrastructure and facilities such as fuel for cooking, safe drinking water, medical health care and sanitation etc.
 20. Ambient air quality will be monitored at the site and the nearest habitation in the months of January, April and November. Ambient air quality at the boundary of the precise mining area shall conform to the norms prescribed by MoEF, GOI.
 21. Measures shall be taken for control of noise levels to the limits prescribed by CPCB.
 22. An Environmental Audit shall be annually carried out during the operational phase and be submitted to the Environment Department.
 23. Digital processing of the entire lease area in the district using remote sensing technique shall be done regularly once in three years for monitoring and report submitted to the Environment Department. The funds earmarked for environmental protection measures shall be kept in separate account and shall not be diverted for other purpose. Year wise expenditure on environmental protection measures shall be reported to the Regional Office, Ministry of Environment and Forests, Bhopal.
 24. Revenue Authorities shall submit within 3 months their policy of (i) Standard operating process/ procedure to bring into focus any infringement/deviation /violation of environmental norms /conditions, (ii) Hierarchical system or Administrative order to deal with environmental issues and to ensure compliance of EC conditions and (iii) System of reporting of non-compliance /violation of environmental norms to the District collector.
 25. The Mining officer shall submit six monthly reports in hard and soft copy on the status of compliance of the stipulated environmental clearance conditions including results of monitored data (both in hard & soft copies) to the Environment Department, and the District Collector and the respective Regional Office of the Maharashtra Pollution Control Board.
 26. Any change in mining area, khasra /Gat numbers, entailing capacity addition with change in process and or mining technology, modernization and scope of working shall again require prior Environmental Clearance as per provisions of EIA Notification, 2006 (as amended).
 27. SEAC-I has appraised the proposals on the basis of information submitted by concerned District Mining Officer. Mining Officer shall submit the list of blocks satisfying conditions stipulated above to Revenue & Environment dept. The list of blocks and conditions stipulated above shall be made available in public domain. It should be published in two local language newspapers and displayed at each block where mining operation is proposed. District mining officer should ensure this and submit compliance report to Environment department with approval from Collector.

=0=



Member Secretary



Chairman

~~Annexure 4~~ "Annexure 4"
N. Somasundaram

M. Tech

Sr. Hydrogeologist (Rtd.) Water Resources Department Govt. of Goa.

Consultant

Ground Water & Environmental Resources Management

Date:-31-05-2016

To,

Sandesh Naik

Partner

Nanu Industries

Parne Village, Dodamarg Taluka.

This refers to the site visit of Parme quarry during the inspection by The Chairman of SEAC along with other committee members. I have prepared the revise report on slope stability and Hydrological aspect of the lease area and it's environment as suggested by The Chairman of the committee.

Thanking you

Yours Faithfully



N. Somasundaram

SUPPLEMENTARY REPORT ON
ENVIRONMENTAL CLEARANCE FOR MINOR MINERAL
PROJECT

FOR

M/S Nanu Industries

Survey No: 26/0 & 33/1, Parme Village,

Taluka Dodamarg, District Sindhudurg, Maharashtra.

AREA 4.9 Hectare

Active mining period - Mining activities after grant of lease for hardly two seasons comprising of **total 12 active months** due to stoppage of work by government by considering that moratorium is applicable to existing ongoing activities (18th January 2013 to 30th June 2013) but was later clarified by Govt. that moratorium was applicable to new units. However due to subsequent monsoons, activities were not started and hence 2013 was almost stoppage of work at quarry.

Prepared by

N.Somasundaram

M.Tech - **First class** (University of Roorkee. Now I.I.T. Roorkee), P.G.Diploma in Aerial photo interpretation for Geo-hydrological studies (**Honours**). Ex CGWB Scientist

Sr.Hydrogeologist Rtd, Government of Goa.

And

Pradip Sarmokadam

M.Sc (Ecology & Environment), PGDEPCT, PGDEE, DIS, MA (Pop. Studies), LA(QMS,EMS,OHSAS)

(Report prepared on behalf of M/S Sadekar Enviro Engineers Pvt Ltd)

Thane Maharashtra.

May 2016

INDEX

S. No.	Subject	Page No.
1.	Introduction, Location, Physiography, Drainage, Rainfall, Soil, Geological formation, Ground Water, Hydrogeomorphic Classification.	1 to 7
2.	Environmental Management of Already Opened Stone Quarry.	8 to 11
3.	Environmental impact Management of water Resources Potential.	12 to 15
4.	Conclusion.	16
5.	Significant Botanical Biodiversity.	17 to 21

LIST OF ATTACHED PLATES

Plate No.	Details	Page No.
1.1	Index Map	22
2.1	View of the Quarry	23
2.2	Geological map	24
2.3	Geological Section	25
2.4	Production Section	26
2.5	Quarry Benches with Retaining Wall	27
3.1	Water Shed Map	28
3.2	Stilling Pond	29
3.3	Stilling Pond Downstream of Quarry.	30

Report on

1. Probable Impact on Water Environment and mitigation measures.

1.1. Introduction :

Report for Environmental clearance for Minor mineral (stone Quarry) at Parme Village In Dodamarg Taluka of Sindhudurg district prepared by M/S Sadekar Enviro Engineering Pvt Ltd was submitted to SEAC during January 2013 by Nanu Industries.. This supplementary report has been prepared after detailed study to cover hydrological aspects not covered in the report with reference to observations raised by SEAC. The main objective of this report is to evaluate additional environmental impacts if any due to stone quarry on hydrological aspects considering local topographic features, soil condition, drainage system and ground water development, to suggest site specific mitigation measures for soil water conservation, green belt development and Water Resources Management.

1.2. Topographic location of Lease area:

4.9 Hectare Lease area (stone quarry) is located between the elevation 150 and 250m above MSL on the eastern slope of NW-SE trending Hill, In Parme Village. It occupies very small portion of Eastern slope of NW-SE trending extensive ridge. On the West Lease boundary, water shed boundary (surface water divide) coincide with the village boundary of Kudase village area. Topography is steeply sloping from ridge in the west towards east through lease up to monsoon drain. (Plate I to plate III) On the South and North topographic divide extends beyond lease boundary.

1.3 Physiography

More than 50 percent of Dodamarg Taluka is hilly terrain. In and around lease area the topography is highly undulating with residual hills, domes, peaks and ridges with inter mountain narrow valleys. Highest peak having elevation of 330m is located west of Parme village and corresponding elevation at nearby river is 50m above MSL. Slopes of Hills and ridges are quite steep. Undulating topography with hills could be seen (Plate II) around Kumbriyal and Pantur in the West to Ghotge (via Parme Village) in the east, south and north is bordered by village Kudase and Shirwal.

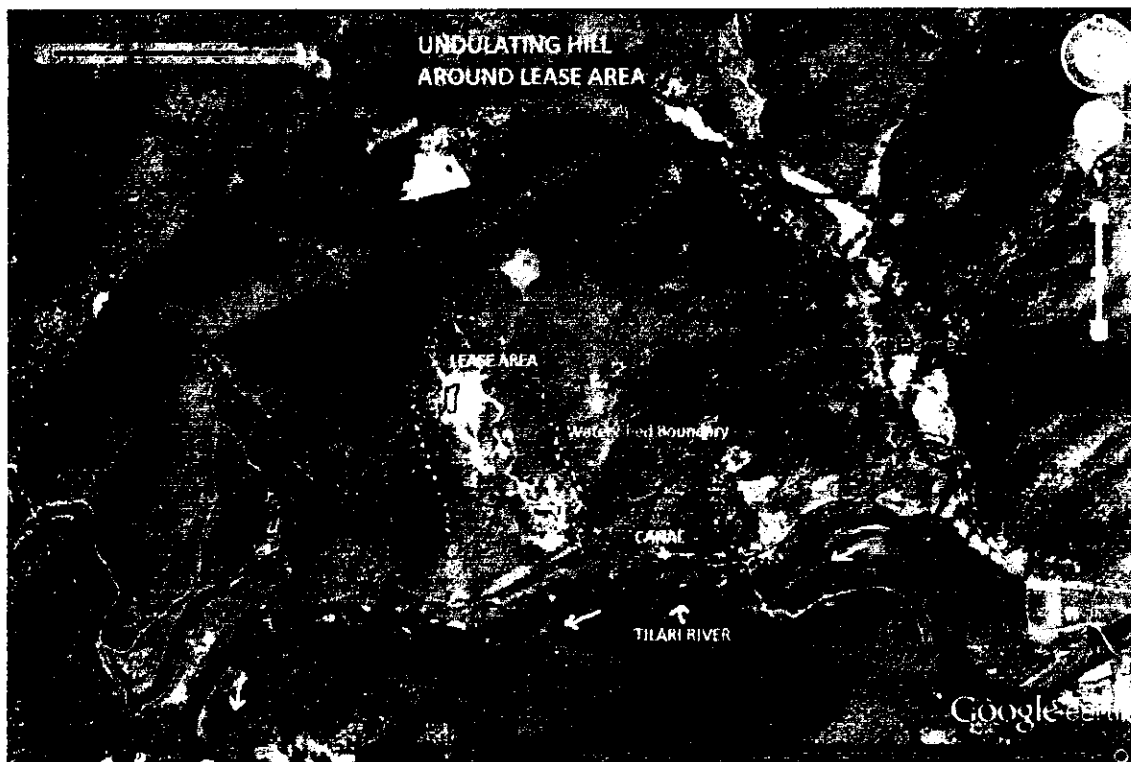


Plate I

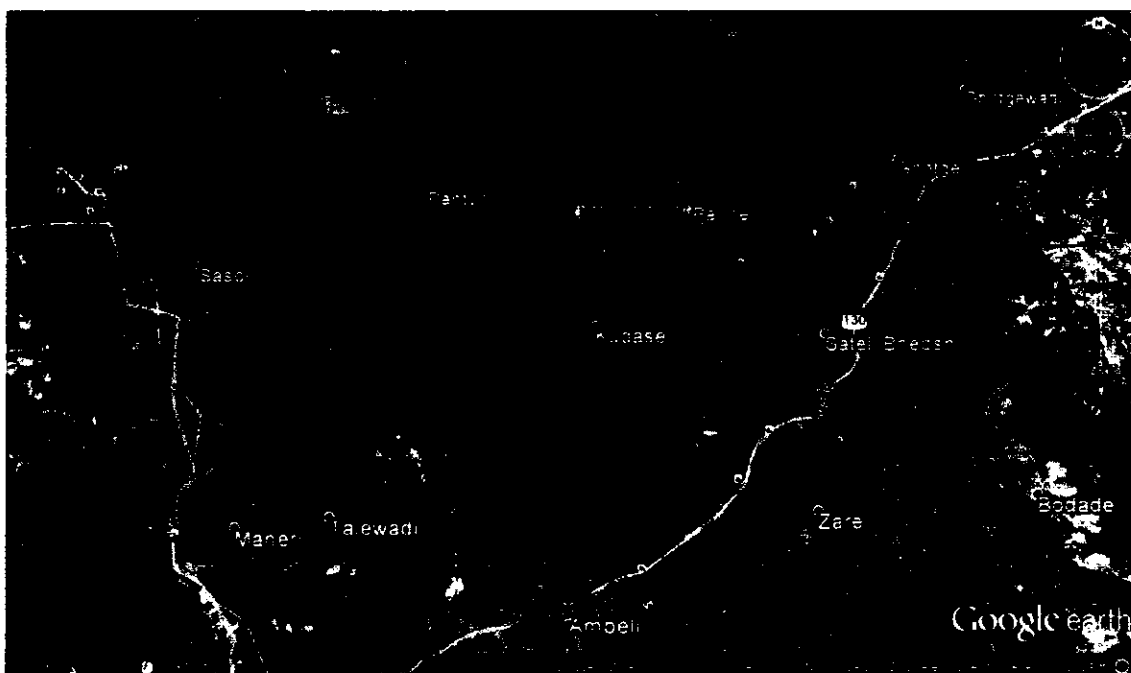


Plate II

1.4 Drainage

The study area falls in the Tilari Sub-basin (Maharashtra) of Chapora basin of Goa. Tilari River originates from Sahyadri hills and joins Chapora River in Goa which ultimately leads the water to Arabian Sea. Tributaries are with small watershed. The drainage system in the area is sub parallel to sub rectangular and most of the streams are fracture controlled. Around the lease area there are two mini water sheds namely Parme watershed in the east and Pantur watershed in the west. In between these two water sheds, lease area falls in one small micro water shed drained by storm water drain (first order stream). All the drainage system in these three water sheds are connecting to the trunk of Tilari river flowing East to West at the southern boundary and one of Tilari canal has been constructed between hill and Tilari river near the site. Tilari dam constructed across Tilari river is located about 9Km upstream of the site (Plate IV). Before construction of the Dam discharge during monsoon months were very high and meagre towards summer. After construction of dam, the Tilari river became perennial and annual rainfall also has increased in Dodamarg Taluka.

1.5 RAINFALL ;

There is significant seasonal variation in rainfall. Bulk of the rain fall occurs in Dodamarg Taluka during South west monsoon from June to September being part of Western Zone Agro climatic region. South West Monsoon is heavy during July and August. Pre-monsoon conventional showers do occur during May, post monsoon showers continue up to October and sometime to November.. Available data on annual rainfall at Dodamarg is presented in the table I.

Table 1. Annual Rainfall at Dodamarg from 2000 to 2011

Sl.No	YEAR	RAINFALL IN MM
	2001	2974
	2002	2834
	2003	3056
	2004	2691
	2005	3554
	2006	3854
	2007	4170
	2008	3769
	2009	3629
1	2010	4809
	Mean annual rainfall	3533mm

(It could be seen that annual rainfall has increased from 2005 onwards)

1.6 Soil :

The soils of Sindhudurg district are classified based on physical characteristics into four types viz., Rice soil, Garden soil, Varkas soil and Alluvial soil. .Lease area and its surrounding undulating hilly region , hill slopes are predominantly covered with Varkas soils. Varkas soil are reddish brown to yellowish red in colour. These soils are poor in fertility, Shallow in depth and coarse in texture. Basically the soil is granular with gravels and angular rock fragments of weathered rock and occurs in patches among boulder out crops. Infiltration capacity is generally good.

1.7 Geological formation:

The lease area and hills and hill slopes all around the lease is occupied by Meta-greywacke unit of Dharwarian Meta-sediment (Achaean) probably extension of younger meta-greywacke unit of Vageri formation. The rock unit basically consists of meta-greywacke with minor proportion of meta-basalt and vein quartz. Boulder Outcrops are seen all along hill slope and massive rocks could be seen in canal cuttings and in Tilari River. This rock unit is suitable for metal quarry with less crushing strength compared to granite and basalt.

1.8 Ground Water;

Ground water occurs in water table aquifer in soil and weathered rock where weathered thickness is more than 6m to 8.0m. Ground Water occurs in semi-confined condition in fractured rock along fracture control valet.

At present there is no ground water development in the small micro-water shed where lease area is located.

1.9 Hydrogeomorphic Classification.

From the rain fall data, soil and slope character given above the micro water- shed of lease area could be broadly classified as run off zone with intermittent ground water recharge area wherever topography is relatively flat and with better soil About 90% of precipitation could be considered as run off potential (over land flow). From 5 hectare Lease area about 15 hectare meter water migrates as run off. However there could be variation depending on intensity of rainfall occurring during each shower.

About 10 percent of rain water could infiltrate the soil. Bulk of infiltrated water migrates as interflow to reach nearby stream as delayed drainage. Aquifer associated with Fractures and

cracks gets recharged in this area especially wherever slopes are gentle and thickness of soil is more.

1.10. Quarry Production Plans and Topography

1. Lease area: 4.9Hectare.
2. Envisaged rate of production: 22,500 Brass per year. For 5years during lease period.
3. Location: Eastern Slope of Hill in ParmeVillage .
4. Elevation: Difference between highest point near ridge to lowest point of lease area is about 100 m.
5. Set back; 7m from all side of lease boundary
6. Ultimate slope of the quarry ; 45 degree Which will be parallel to original hill slope in the same direction.

Year wise development and production plan and cross sections exhibit that during lease period of 5years **there will be no change in direction of topography and there will be no negative change in monsoon run off potential of the lease area.**

Beyond 5years when the quarry reaches ultimate level there would be depression to harvest and store rain water to the tune of minimum 2 hectare meters (as per rainfall intensity). The storage in abandoned quarry could enhance ground water recharging of the aquifer cracks and joints besides migration of water along slopes downstream.

2,Environmental Management of Already Opened Stone Quarry in S.No.26 (Part) and 33/1 (Part) at Parme Village, Dodamarg Taluka of Sindhudurg Dist., Maharashtra State.

As per the recommendation given in the Report of the Expert committee on the Environmental impact of hill cutting for Quarrying in Thane district Maharashtra and correlating to local site condition EIA has been carried out in and around existing stone Quarry of M/s. Nanu Industries at Parme village and EMP has been prepared and presented here. Two important aspects namely 1.Hill cutting & slope stability
2.Environmental management of Water Resources potential

2.1Background Information

After obtaining all required permissions and approvals from Govt,of Maharashtra M/S Nanu industries has carried out Quarrying operations from 24th May 2011 to 23rd May, 2016.During this period, operation of the quarry was only for 2 seasons, due to several interruptions, and accordingly the following activities have been carried out.

A.. Approach road to site has been established.

B..80percent of Overburden consisting of patches of soil cover among boulders, weathered rock and jointed rock has been scraped in the entire quarry area to the extent of 90 percent and fresh meta-greywacke rock (so called basalt) has been exposed. (plate 2.1)

C. Excavation of benches (for having width of 6m and bench height of 10m) has been initiated and 50 percent of work has been completed).There are six number of benches which are left half way due to stoppage of work (lease period expired.)

d.. Now the work left is shaping of benches. Further quarrying would be below ground level and may not involve much hill cutting as already hill has been cut.

Leaving the quarry after scarping the overburden and cutting hill may lead to environmental degradation related to safety of hill slope and water resources potential of the watershed. On behalf of Nanu Industries this report has been prepared after conducting detailed studies to mitigate problems of safety of hill slope and water resources management plan.

2.2 Rock Cutting and Stability of Slopes (General)

Slope failure occurs when the downward movements of the material due to gravity and shear stress exceeds shear strength. Therefore factors that tend to increase the shear stress or decrease the shear strength increases the chances of failure of a slope. Different process that can lead to failure of slope in hard rock areas are Geological discontinuity. Water entry through discontinuity (increase in pressure)and reduction of shear strength. Geometry of slope is one of the important factors of stability of rock cut slopes. And Shear strength along discontinuities.

In hard rock areas the stability of rock slope is significantly influenced by structural discontinuity in the rock in which slope is excavated, Discontinuity may be in the form of: bedding plane, Schistosity, foliation, joint ,cleavage, fracture, fissure ,cracks, shear zones or variety of faults and red bole and green bole beds in Deccan basalt, Besides this toppling of weathered Zone.

Hill cutting in Basaltic rock studied by the committee in Thane district and earlier studies conducted by undersigned under hydro geological mapping of many part of Maharashtra has brought to light That Basaltic rock of Deccan trap is quite vulnerable for sliding due to many sets of joints, thick weathered and semi weathered materials, columnar jointing of various sizes ,presence of Red-bole and green boles. Therefore slope stability analysis is essential in areas having geological discontinuities. Entire western Maharashtra is Covered with Deccan Trap basalt except in parts of Sindhudurg District.

After doing detailed slope stability analysis the recommendation given by the committee for breaking slope by benching is as under.

Status of the rock	Slope angle (degree)from horizontal	Bench Height	Bench Width
Jointed Basalt	65	10m	6 ,0m
Weathered Basalt	52	8m	6m

2.2 Rock Cutting and Slope Stability Site Specific analysis (Parme site)

A. Geometry of Slope;

Within the lease area there is variation of slope in different sections. It could be seen in the cross section A-A (plate) That from the top of hill to 90m length the angle of slope from horizontal is about 45 degree and 90 to 160m the angle is less than 15degree,

Along the section B-B (plate 2.2 and 2.3) the slope of the hill from horizontal varies from.

1. Up to 60m from top of the hill 45 degree
2. From 60m to 110meter less than 15degree
3. From 110 to 135m 50 degree
4. 135m to 160 m 45degree

2.3 Local Geological Scenario

1. Thickness of soil cover is thin and occurred in patches among rock exposures and rock debris. It could be seen on the quarried section that average thickness of weathered and jointed rock is also too less at the order of 1.20m. Fresh hard massive meta-greywacke has been exposed. This unit of rock has been quarried in Goa and part of Sindhudurg district,. meta-greywacke rock has been termed as basalt (This the commercial term generally used for the product) But this rock is entirely different from Basalt studied in Thane district and covered in most part of Maharashtra.

A. Check list of Geological discontinuity analysis

As hard massive rock has been clearly exposed In the quarry face after removal of overburden, it was convenient to study the presence of geological discontinuity with the following check list and the results are as under.

Check list of Geological Discontinuity	Result and Remark
Fault and shear zones	absent
Set of joints Cracks fissures foliation scistocity	absent

Joints and fractures cleavages slopping towards cut slope	absent
Columnar joints and Redbole and green coles	Absent
Exfoliation boulders and exfoliation joints	Absent
Thickness of weathered material and overburden soil which can topple on slope cutting	It is thin and has been effectively scarped already on hill slope. There is no danger due to soil movement
Tension joints	absent

2.4 Slope stability management

As there is no significant geological discontinuity at Quarry site, slip circle analysis is not passible and not required as the rock cut slopes are very stable, There may not be any adverse impact of land slide / soil creep due to quarrying activity

A. As recommended by the committee for Basaltic terrain of Thane district the benches have been cut keeping in view of having ultimate bench height of 10mtrs and bench width of 6 mtrs. (Plate 2, 3) If approved, half benches shall be shaped.

B. Occurrence of Tension joints if any in future due to quarrying activity shall be grouted with cement to prevent entry of water during monsoon.

C. It is proposed to construct retaining wall at the boundary of top most benches at vulnerable locations to prevent soil creep. (Plate 2.4)

d. Reject dumps consisting of rock fragments murrum and soil) located downstream of quarry have been rolled layer by layer and compacted, In future also it is proposed to do the same,

f. It is proposed to maintain 1:1 Slope with benches where ever required .

g. It is proposed to grow grass and trees to stabilize the slope of reject dumps..

3.Environmental impact Management of water Resources Potential around Existing Stone Quarry of Nanu Industries At Survey No. 28/0 & 33/1 Part Village Parme, Dodamarg Taluka, Sindhudurg district Maharashtra

3.1 Basic Information;

A) Total lease area 4.9hectate. Located at the western boundary of a micro water shed.

B) Total micro-watershed area 160 hectare (as measured from google image)

C) only First order stream directly drains in to main trunk of Tilari river (plate 3.1) It is elongated watershed

d) In the water shed thickness of soil cover and vegetation is poor at the peaks and steep slopes. However down the slopes both soil cover and vegetation increases

e) There is no cultivation within the watershed and no ground water development

d) Tilari dam is located upstream and Tilari canal is passing at the foot of the watershed near confluence. Strom water from catchment area of Tilari River is stored at dam and canal irrigation return flow from canal irrigation is substantially contributing to post monsoon flow in the Tilari River.

F) Average mean annual rainfall is about 3500mm

3.2 Surface water Management (Run-off management)

Rain fall is the main source of water resources potential of the area. Rainwater flowing over ground is termed as Overland flow or Surface Run-off. Migration of Rain water entering ground without reaching ground water is interflow and migration after reaching ground water is ground water flow.

Run off rate for a given storm depends up in various factors like intensity of rainfall, duration of rainfall, infiltration capacity of soil, slope geometry and land use. Volume of water flowing out (Run off is generally calculated with rhe formula $\text{Run off Volume} = C i A$

Where

C =Run off coefficient (depends on factors explained above)

I = depth of rain fall in meter

A = drainage area in hectare / 5qm.

V = volume run off in hectare meter /cubic meter depending on area input data

Run off Volume from the 5 hectare Lease area before development of Quarry and After Removal of overburden is given in table below:-

Table I, Run off Volume Before and After Quarry Parme Site of Nanu Industries

Catchment area 5 hectares. Run off Coefficient before: 0.85 after quarry: 1

Considered Rainfall in mm	Run off Before Quarry	Run of after Quarrying	Change in Volume	Reduction in Infiltration	Remark
<u>Annual mean rainfall 3500mm</u>	<u>14.8 Ham</u>	<u>1 7.5 Ham</u>	<u>2.7 ham</u>	<u>2.7 ham Per year</u>	
100mm rainfall in 24 hours	<u>0.425</u>	<u>0,5ham</u>	<u>0.075hm</u>	<u>0.075ham</u>	

3.2.1 Run off management ; It is proposed to manage enhanced run off due to hill cutting and quarrying it is proposed to construct 3water conservation ponds/stilling ponds .One at the foot of quarry (Size 80m X 20m X 8m-Plate). Ultimately this pit will reach 25m below ground level of the Quarry.) And another two located at downstream one having dimension of (15m X 7.5m X 4m Plate)

3.3. Silt management

Silt potential is limited due to meager quantity of overburden soil. However silt can flow during monsoon to Tilar River from soil disturbed during quarrying, soil dumped near quarry and dust generated during quarry operation. Besides providing settling ponds to

break run off .Stilling basins have been provided at the base of drain before leaving the property and clean water is let to Tilari River.

3.4. Ground water Management

Quarry area is located on hill slope near peak (near the surface water and Ground Water Divide).For the given Hydro geological set up of the area there are no aquifer system (Water table aquifer/Perched aquifer and Semi-confined to confined aquifer, which can hold and yield water.

Basically in quarry area (lease area) about 15percent of rain water gets infiltrated during monsoon and migrates downstream as interflow at the contact of overburden and may recharge ground water system downstream. Reduction in infiltration of rainfall gets compensated by run off control measures proposed.

Being undulating Hilly terrain, at present there is no ground water development in the watershed. Scope for ground water development in future is also remote due to non-availability of cultivable lands in immediate vicinity. As such availability of ground water and demand is limited. The quarrying activity may not adversely affect ground water potential of the watershed. However run off control measures proposed would enhance ground water recharge opportunity.

Storing of rain water in abandoned quarry would serve as ground water recharge structures to aquifer associated with cracks and joints in hard rock besides serving as rainwater harvesting structures.

Seepage from Tilari dam located 9Km upstream of the water shed and returns flow from canal irrigation has enhanced water resources potential of the Tilari sub -basin substantially.

4. CONCLUSIONS:-

Lease area has already been disturbed due to quarrying activity .Environmental damage has been caused partially due to scrapping of overburden and hill cutting . It could be seen on the summarized details given in relevant chapters that

1. There is no adverse impact of rock cutting on slope stability. Marginal problem if any could be mitigated by providing benches and retaining walls to protect soil creep at the top if any,
2. Marginal encasement in surface run-off and reduction in rain water infiltration could easily be managed by providing three settlement ponds.
3. Flow of silt could be marginal due to quarrying in hard rock proposed settling ponds for water conservation, could manage this problem.

It could be stated that under the given Hydrogeology and Hydrological set up of the lease area and water shed there may not be any adverse Environmental impact water resources potential and slope stability due to hill cutting if mitigation measures are strictly followed.

DIVERSITY of MIRA BHAYANDER MUNICIPAL CORPORATION

Mira Bhayandar Corporation Area is endowed with extensive and valuable ecological resources. The geographical setting itself, with the sea and the sea coast along the west, Vasai and Gorai creeks to the north and the south and forests to the east can be considered as a major environmental advantage, which needs to be put to the best use for the development of the city. Ensuring protection for these environmental features at the same time utilizing these resources to the optimum is basically the key to sustainable development of the area.

The Mira Bhayandar Corporation Area is associated with diverse and highly productive ecosystems. It has vast stretches under wetlands, while the hills on the east are under forests, which are part of the Sahyadris. The sandy shores along the sea coast are linked to a marine ecosystem, and the inland waste bodies are part of a rich estuarine ecosystem, replete with mudflats, creeks and salt pans. Extensive mangrove growth is prevalent among the major creeks and water channels where tidal effects are experienced. These provide excellent habitats to a variety of organisms, including various species of benthos, fisheries and avi fauna. With rapid urbanization of the region, there is a risk of these getting destroyed. World over, planners have woken up to the importance of these ecosystems in the city's survival chances in times of adversities. Hence all measures have to be taken to preserve these systems. It needs to be noted that these areas support large population of fish life at their early stages of growth and loss of this habitat would have a direct impact on the fisheries production at the sea and simultaneously to the livelihood of scores of fishermen, who form one of the earliest citizens of the area.

Agriculture is an important activity in rural areas especially those in the fringes of expanse like Uttan, Rai, Morva, Kajupada. Agricultural land is on the decline as development pressures affect it. Low lying agricultural areas along the creek, salt pans have also been converted to wetlands due to sea water entering the farming area through breeches. Total forest area includes hills of Dongari, Uttan and Ghodbunder.

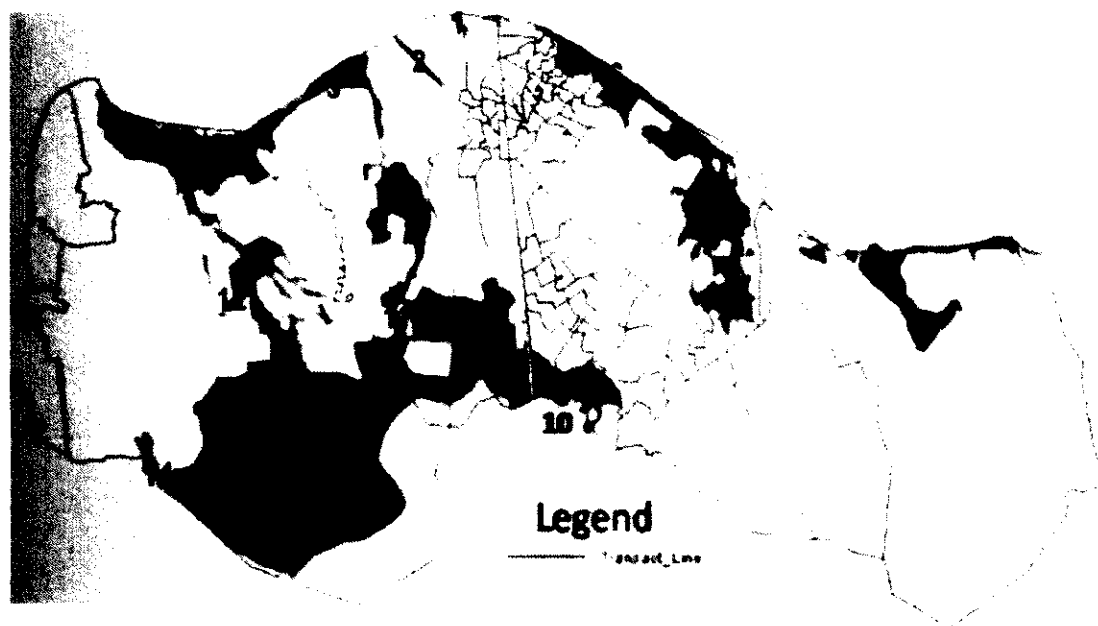
FLORA

Kadamba, Teak, Karanj, shisam, and species of Acacia, Ziziphus, Euphorbia, flame of the forest, red silk cotton and a number of other varieties of flowers. Karvi or Karvy, a flowering plant that flowers once in seven years, can be found in the area. The utility trees and plants found in the forests, in order of their importance, are: - Teak (*Tectona grandis*) is used in buildings, industries, furniture-making etc. Ain (*Terminalia tomentosa*) is tall, and durable and hard wood, is used for building and fuel. The bark is much valued in tanning and its sap yields a gum which is largely eaten. Khair (*Acacia catechu*) is a valuable tree both for timber and fuel. Apta

(*Bauhinia racemosa*) is a small fibrous tree whose leaves are used for making cigarettes. Hed (*Adina* or *Nauclea cordifolia*) is more than 35 feet long. Due to their durability in water and length, the logs are much prized for fish stakes. Kalamb (*Stephegyne* or *Nauclea parvifolia*) is used like Hed for making fish stakes. Bibla (*Pterocarpus marsupium*) is a large tree yielding gum. Palas (*Butea frondosa*) is not used much for building. Its flowers yield a dye and the roots, a fibre. A watery fluid gathered from its roots is considered a cure for fever, and its seeds, for worms. Karvi (*Strobilanthes grahamianus*) bears a cone-shaped, mass of calices from which beautiful blue flowers appear. After the flowers fall, the cones become covered with a sticky exudation called mel. The seeds remain in the cones till they become dry and fall out. The stems are largely used as wattle for huts and cottages. Dhavada (*Anogeissus latifolia*) is a valuable fire-wood tree producing a gum. Besides fuel, its strong and tough wood is used for cart axles, poles and also in cloth printing. The leaves yield a black dye and are used in tanning. Savar (*Bombax malaburicum*) is the well-known silk cotton tree has very light wood which is hollowed for canoes and water troughs. It is used as tinder.

As per the Tree Census report which had been commissioned to survey mangrove density across the 79.5 square kilometre region, out of total mangrove survey area of 29.1 sq.km 20.7 sq. km is covered by mangroves, and 8.4 sq. km is estimated to be salt pan land. The bio-diversity survey conducted by M/s Terracon Ecotech Pvt. Ltd., using the satellite imagery has led to the identification of a total of 10 mangrove species belonging to 7 families in the twin-city. Satellite images revealed that there are potentially three separate habitats in Mira Bhayander where mangroves could be found. All these three habitats are geographically isolated from each other. Hence all three sites were sampled during survey using stratified sampling technique.

- | | |
|--------------------------------------|-----------------------|
| 1. North edge along Vasai Creek | 4. sampling locations |
| 2. Southern Boundary at Manori Creek | 5. sampling locations |
| 3. West edge along the coast | 6. sampling locations |



The zone wise distribution and density of mangroves is –

Density	South Zone (Manori Creek)	North Zone (Vasai Creek)	West Zone (Coast)
Density for sapling / m ²	1.4	5.875	0.4
Density for seedlings/ m ²	2.85	9.125	6.175
Density for trees /100 m ²	0	3.77	0

The mangroves lining Vasai Creek span for 7.41 sq. Km while those near Manori creek cover a greater area of about 13.43 sq. Km. Perhaps, the mangroves of these two creeks were connected via various waterways in the past. Today, the connectivity between the two patches is almost moribund due to construction activities and salt pans. The only remaining natural structure connecting the mangrove patches is a few metres-wide inlet from Vasai creek that flows southwards into the mangroves of Manori creek (19° 18'10.17" N and 72° 48'32.23" E). It has not been obstructed by any anthropogenic structures so far. Uttan Road that crosses this small water body does so by means of a small bridge and poses no obstruction to the flow of this inlet. A thin line of mangroves runs along the inlet at some places, while salt pans cover most of its stretch except towards its head and mouth where dense mangrove swamps still exist. According to the principles of ecology, this link connecting the two mangrove swamps of north (Vasai creek) and south (Manori creek) is crucial for their long-term survival. The mangroves lining Vasai Creek span for 7.41 sq. Km while those near Manori creek cover a greater area of about 13.43 sq. Km. Perhaps, the mangroves of these two creeks were connected via various waterways in the past. Today, the connectivity between the two patches is almost moribund due to construction

activities and salt pans. The only remaining natural structure connecting the mangrove patches is a few metres-wide inlet from Vasai creek that flows southwards into the mangroves of Manori creek (19° 18' 10.17" N and 72° 48' 32.23" E). It has not been obstructed by any anthropogenic structures so far. Uttan Road that crosses this small water body does so by means of a small bridge and poses no obstruction to the flow of this inlet. A thin line of mangroves runs along the inlet at some places, while salt pans cover most of its stretch except towards its head and mouth where dense mangrove swamps still exist. According to the principles of ecology, this link connecting the two mangrove swamps of north (Vasai creek) and south (Manori creek) is crucial for their long term survival. It is the remaining last link between the two creeks so that the mangroves are not isolated patches, but a continuous whole. Adult mangroves were absent in Manori creek side and coastal side. These places were dominated by seedlings and saplings. Frequency and Relative Frequency of occurrence of mangrove plants are as follows, in descending order:

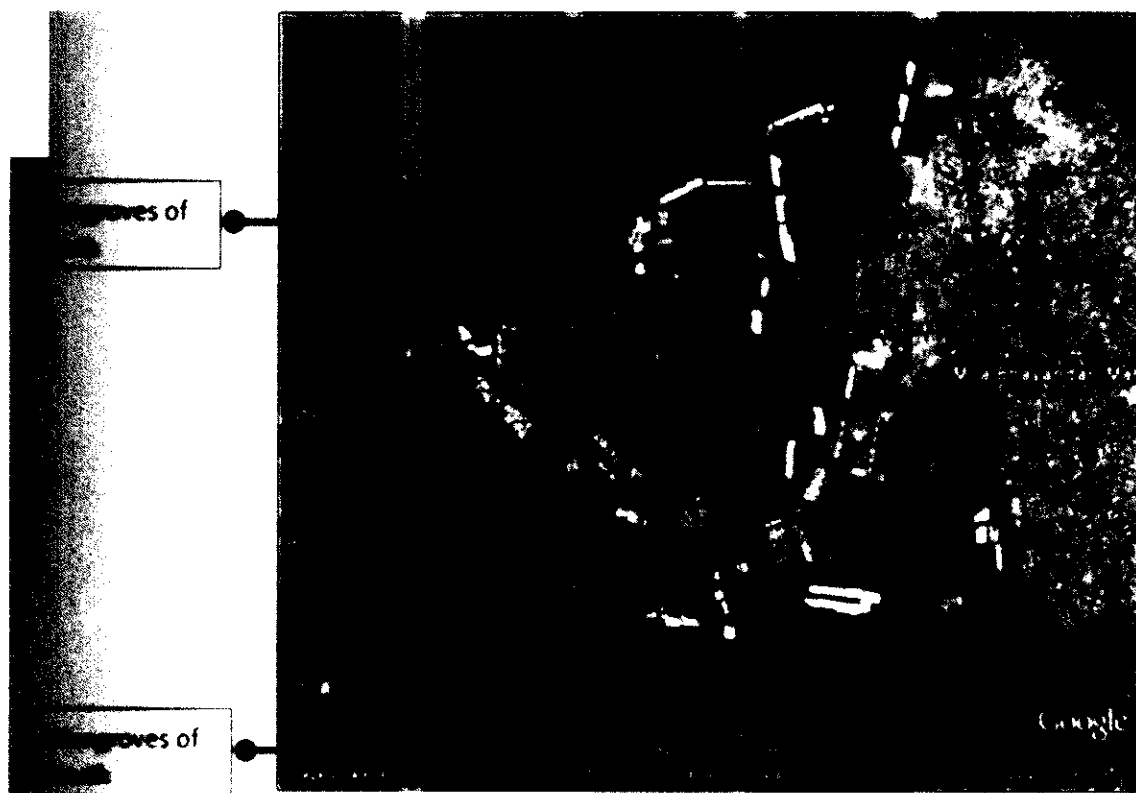


Table no. 1: Frequency & Relative Frequency of occurrence of mangroves

Sr. No.	Botanical Name	Common Name	Frequency	Relative Frequency (%)

1	<i>Acanthus illicifolius</i> L.	Marandi, Kateri	1.00	29.63
2	<i>Avicennia Marina</i> (Forsk.) Vierh	Tivar	1.00	29.63
3	<i>Excoecaria agallocha</i> L.	Huri, Geva, Phungi	0.375	11.11
4	<i>Rhizophora mucronata</i> Lamk.	Kandal	0.25	7.41
5	<i>Avicennia officinalis</i> Linn.	Tivar	0.1875	5.56
6	<i>Ceriops tagal</i> (Perr.) C.B. Robinson	Kirkiri	0.1875	5.56
7	<i>Agiceras corniculatum</i> (L.) Blanco	Sugandha	0.125	3.70
8	<i>Sonneratia apetala</i> Buch. Ham.	Chipi	0.125	3.70
9	<i>Bruguiera cylindrical</i> (L.) Bl.	Kandal	0.0625	1.85
10	<i>Lumnitzera racemosa</i> Wild.	NA	0.0625	1.85

Source: Terracon Ecotech Pvt. Ltd

Thus, except for *A. Marina* and *A. Illicifolius*, rest of the species were found only in a few sampling locations. The mangroves at Mira Bhainder were highly dominated by *Avicennia Marina* followed by *Acanthus illicifolius*. At Jamdarpada at the edge of Mira Bhainder and Mumbai boundary some good tree diversity was encountered which included *Lumnitzera racemosa*, *Bruguiera cylindrical*, *Ceriops tagal*, *Avicennia officinalis*, *Agiceras corniculatum*, etc.

A corridor between the two mangrove populations via the inlet mentioned above could aid in an efficient dispersal and consequent exchange of genes. It would also be a link between the faunal assemblages of both the patches. Though both the patches have *A. Marina* and *A. Illicifolius* as the dominant species, during the survey there were some plants exclusively found in only one of the two populations.

Table no. 2: Mangroves distribution in both creeks

Sr. No.	Mangroves found exclusively in Vasai Patch
1	<i>Avicennia officinalis</i> Linn.
2	<i>Sonneratia apetala</i> Buch. Ham.
	Mangroves found exclusively in Manori Patch
1	<i>Agiceras Corniculatum</i> (L.) Blanco
2	<i>Ceriops tagal</i> (Perr.) C. B. Robinson
3	<i>Lumnitzera racemosa</i> Wild.

The same principle applies to the epibenthic fauna. While some species were common throughout both sites, there were a few that occur either in Vasai or Manori mangroves. This patchy distribution of some species can be taken as an indicator of discontinuous distribution of habitat.

Table no. 3: Epi - benthic faunal distribution in both creeks

Sr. No.	Mangroves found exclusively in Vasai Patch
1	<i>Telescopium telescopium</i>
2	<i>Melampus bidentatus</i>
3	<i>Littorina</i> sp
	Mangroves found exclusively in Manori Patch
1	<i>N. crepidularia</i>

Another consequence of a break in connectivity is seen in Mira Bhayandar east. The western railway line has bisected the mangroves into two parts leading to almost complete isolation of a large patch of mangroves spanning around 1.36 sq km. About half of this patch falls under Mira Bhayandar jurisdiction. One inlet still connects this patch to the mangroves on the west since the railway line passes via Railway Bridge over this inlet. However, this inlet is extremely polluted, with an overbearing stench. This has led to the following grave consequences:

- Even if any biological material is transferred through the canal, its viability is questionable due to the polluted waters it has to float in. Thus, we can say, with degree of certainty that any exchange of faunal species, mangrove seeds etc has ceased between the mangroves of the west and the east.
- Periodic exchange of tidal waters is essential for mangroves to survive. The polluted inlet is not enough for an unhampered flow of clean tidal water into the mangrove patch. Cessation of exchange of tidal waters is slowly but surely leading to a collapse of the mangrove ecosystem. At one of the sampling locations in this patch there were no mangrove seedlings and saplings only adult trees of *A. marina* species.
- Tidal waters are necessary for mangrove associated fauna as well. Not a single species of epi-benthic fauna were found during our surveys. Epibenthic fauna such as crabs help in cleaning the leaf litter, and bioturbation of the soil. Their absence was causing an accumulation of decomposing leaf litter. Also aeration of the soils would have stopped because of their absence.
- This patch is now a breeding ground for pests such as mosquitoes and a dumping ground of garbage for the nearby slum area.

- Due to absence of young plants, and epibenthic fauna, degradation of soil conditions, and huge quantities of garbage, this is no longer a viable mangrove population.

Mangroves are not the only coastal vegetation but more appropriately, they are the ecosystem which is vital for the environment as well as for inhabitants. Besides mangroves, 31 varieties of Strand vegetation as well as 46 varieties of other Flora were found during the survey carried out by M/s Terracon Ecotech Pvt. Ltd. In the project area there are no rare & endangered species of economic significance which require management.

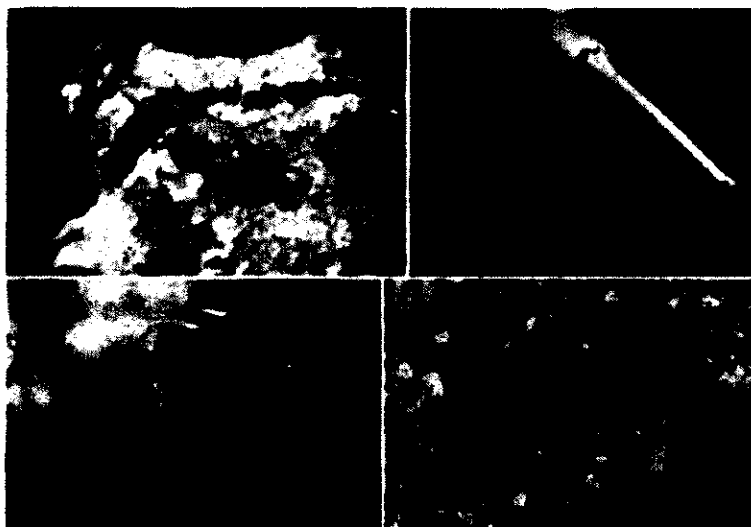
FAUNA

The forest cover provides the ideal habitat for many wild animals. Chital (or spotted deer), Rhesus Macaque and Bonnet Macaque are some of the wild mammals that can easily be spotted roaming inside the park. Other large mammals found in the park are: Black Naped or Indian Hare, Muntjac (Barking Deer), Porcupine, Asian Palm Civet, Chevrotain (Mouse Deer), Hanuman or Gray Langur, Indian Flying-fox, Sambar Deer and Leopard. One can also spot hyena or four-horned antelope. 172 species of butterflies has been reported here, of which the spectacular ones are Blue Mormon, the phenomenal artist of camouflage the Blue Oak leaf, the bright jezebels and Large Yellow and White Orange tips, Tigers, Egg flies and Sailers.

Mangrove wetlands are the major contributors to global biodiversity. They contribute more than 20% of the world's taxa and genetic resources although occupying only about 6% of the World's surface. Because they are surrounded by loose sediments, the submerged mangroves' roots, trunks and branches are islands of habitat that attract rich epi-faunal communities including bacteria, fungi, macroalgae and invertebrates. Crabs lives in burrows dug in mangrove mud and they alter the structure and chemistry of sediment. They are the "ecosystem engineers" that create new habitats and change the availability and quality of food, shelter and refuge for other constituent species in mangrove ecosystems. The changes to the physical, chemical and biological nature of the ecosystem as a result of the presence of crabs is collectively called bioturbation. In mangrove ecosystems, bioturbation caused by crabs is a life-supporting process. Nearly half the water that moves into the mangrove areas with tide could at some stage be held inside the burrows, indicating its potential in exchanging ground and surface water and hence salt and other dissolved plant nutrients. The presence of crab therefore helps to reduce soil salinity, preferred by non-secretor mangroves like species of Rhizophora. By aerating the soil, they may also support establishment of mangrove seedlings in aerobic soils which are less stressful than the normal mangrove soils that are anaerobic. Additionally, insects,

molluscs, reptiles, fishes, birds and mammals thrive in the habitat and contribute to its unique character.

Five varieties of Crustacea (4 at mangroves, 1 at rocky shore along western coast), 8 varieties of Mollusca, one species of Annelid, Nereis and Mudskippers namely *Periopthalmus* sp was observed during survey carried out by M/s Terracon Ecotech Pvt. Ltd.



Some Crabs found in a mangrove ecosystem

Epi-benthic fauna was observed only at the North (Vasai Creek) and South (Manori Creek) sites. No mangrove fauna was observed at the west coast. The two sites are physically close to each other, but are geographically isolated.

Densities of crabs remained uniform throughout the two sites. Crab burrow counts, which are actually known to be better indicators of crab numbers, were also similar for both sites, indicating that there isn't any significant difference in crab populations between Vasai & Manori creeks. The same cannot be said of '*Telescopium telescopium* shells. They are significantly greater in number at the Vasai creek side. *Nerita crepidularia* was found exclusively at the northern sites. *C. Nucleus* was commonly found at the Manori creek sites.

Site	Parameter	Crabs	Crab Burrows	T. telescopium	P. cingulatus	C. nucleus	N. crepidularia	M. bidentatus	Littorina sp	Mud skipper	Onchidium
North	Mean Density(in 1 sq m)	1.0	3.8	1.3	3.4	0.6	0.0	1.0	0.6	1.0	0.01
	95% confidence interval upper	0.6	2.7	0.5	2.0	-0.3	--	-0.5	-0.3	0.4	--

	95% confidence interval lower	1.4	5.0	2.1	4.7	1.5	--	2.4	1.4	1.7	--
	Std. Deviation	2.1	11.0	4.6	12.5	3.3	0.1	7.1	3.0	3.3	0.10
South	Mean Density(in 1 sq m)	0.6	3.7	0.0	1.6	14.8	0.1	0.0	0.0	0.1	0.0
	95% confidence interval upper	0.2	2.9	-0.4	0.6	13.2	-0.4	---	---	-0.5	-1.4
	95% confidence interval lower	1.1	4.5	0.5	2.5	16.4	0.7	---	---	0.7	1.5
	Std. Deviation	1.5	6.3	0.2	5.0	27.0	0.8	0.0	0.0	0.7	0.2

Table 3: Epibenthic faunal densities

Avian Fauna: Some of the birds one may see in the park are: Jungle Owlets, golden orioles, racket-tailed, drongos, minivets, magpies, robins, hornbills, bulbuls, sunbirds, peacock, and woodpeckers. Migratory and local birds such as paradise flycatcher and various species of kingfishers, mynas, drongos, swifts, gulls, egrets, and herons have also been spotted.

Analysis of bird & butterfly data was done for the entire region as a whole by M/s Terracon Ecotech Pvt. Ltd. Data from all three sites revealed 53 species of birds belonging to 10 orders and 26 families. 28 species of butterflies belonging to 4 families were also recorded. The list of birds & butterflies sighted during survey are given below.

In the project area there are no rare & endangered species of economic significance which require management.

Table 4: List of Bird species sighted in MIRA BHAYANDER during Survey

Common Name	Scientific Name	Local Name	Seasonal Status
Order Pelecaniformes			
Family Phalacrocoracidae			
Little cormorant	Phalacrocorax niger	Pan Kawla	RM
Family Ardeidae			
Gery Heron	Ardea cinerrea	Rakhi Balaak	RM
Large Egret	Casmerodius albus	Lahan Bagla	RM
Indian pond Heron	Ardeola grayii	--	R
Cattle Egret	Bubulcus ibis	Gaay Bagls	RM
Median Egret	Mesophoyx intermedia	Bagla	RM
Little egret	Egretta garzetta	Bagla	R
Western reef egret	Egretta gularis	--	RM
Family Ciconiidae			
Painted Stork	Mycteria leucocephala	Rangeet Karkocha	RM
Family Threskiornithidae			
Black headed ibis	Threskiornis melanocephalus	Kudalya	R
Eurasian spoonbill	Platalea leurcorodia	--	RM
Order Falconiformes			
Family Accipitridae			
Black Kite	Milvus migrans	Ghar	R
Shikra	Accipiter badius	Shikra	R
Black eagle	Ictinaetus malayensis	---	R
White bellied sea eagle	Haliaeetus leucogaster	Sagari Garud	R
Order Gruiformes			
Family Rallidae			
White breasted waterhen	Amaurornis phoenicurus	Pankomdi	R
Order Charadriiformes			
Family Charadriidae			
Red wattled lapwing	Vanellus indicus	Titwee	R

Family Scolopacidae			
Common sandpiper	Actitis hypoleucos	Tootwar	RM
Wood sandpiper	Tringa glareola	--	M
Common redshank	Tringa totanus	--	RM
Family Laridae			
Brown headed gull	Larus brunnicephalus	--	RM
Order Columbriformes			
Family Columbidae			
Blue rock pigeon	Columba livia		R
Spotted dove	Streptopelia chinensis	Kawda	R
Order Cuculiformes			
Family Cuculidae			
Asian koel	Eudynamys scolopacea	Kokila	R
Lesser coucal	Centropus bengalensis	Bharatwaj	R
Order Apodiformes			
Family Apodidae			
Asian palm swift	Cipsiurus balasiensis	--	R
Order Coraciiformes			
Family Alcedinidae			
Common Kingfisher	Alcedo atthis	Khandya	RM
White throated Kingfisher	Halcyon smyrnensis	Khandya	R
Family Meropidae			
Small bee eater	Merops orientalis	Veda raghu	R
Family Upupidae			
Common Hoopoe	Upupa epops	Hoopya	RM
Order Piciformes			
Family Capitonidae			
Brown headed barbet	Megaliama zeylanica	--	R
Order Passeriformes			

Family Danidae			
Long tailed shrike	Lonius schoch	Gandhari	R
Family Oriolidae			
Eurasian golden oriole	Oriolus oriolus	Haladya	RM
Family Dicruriidae			
Black drongo	Dicrurus mrocercus	Kotwal akshi	R
Family Sturnidae			
Common myna	Acridotheres tristis	Myna, Salunki	R
Asian pied starling	Sturnus contra	---	R
Family Corvidae			
House crow	Corvus splendens	Kawla	R
Jungle crow	Corvus mocrhyncos	Dom Kawla	R
Family Irenidae			
Common iora	<i>Aegithino tiphia</i>	Subhag	R
Family Pycnonotidae			
Red vented bulbul	<i>Pycnonotus cofer</i>	Laalbudya Bulbul	R
White cheeked bulbul	<i>Pycnonotus leucotis</i>		R
Red whiskered bulbul	<i>Pycnonotus jocosus</i>	Shipahi Bulbul	R
Family Muscicapidae			
White browed fantail flycatcher	<i>Rhipiduro oureolo</i>		R
Plain Prinia	<i>Prinia inornata</i>	Vatavatya	R
Ashy Prinia	<i>Prinia sociolis</i>	Rakhadi Vatavatya	R
Common tailorbird	<i>Orthotomus sutorius</i>	Shimpi	R
Oriental magpie robin	<i>Copsychus soularis</i>	Dayal	R
Indian robin	<i>Saxicoloides fulicato</i>	Dayal	R
Family Nectariniidae			
Crimson sunbird	<i>Aethopyga siparaja</i>	Shinjee Surya Pakshi	R
Purple rumped sunbird	<i>Nectarinio zeylonico</i>	Shinjeer, Surya Pakshi	R
Family Ploceidae			
House sparrow	Passer domesticus	Chimni	R
Baya weaver	Ploceus Philippines	Sugran Pakshi	R
Black headed munia	Lonchuro molacco	Munia	R
Red avadavat	Amandovo amandava	Munia	R

Table 4: List of Butterfly species sighted in MIRA BHAYANDER during Survey

Sr No.	COMMON NAME	SCIENTIFIC NAME
	Family Papilionidae	
1	Common Blue Bottle	Graphium sarpedon
2	Tailed Jay	Graphium agamemnon
3	Common Mormon	Papilio Polytes
4	Common Lime	Papilio demoleus
5	Blue Mormon	Papilio polymnestor
	Family Pieridae	
6	Small Salmon Arab	Colotis amata
7	Large Salmon Arab	Colotis fausta
8	Great Orange tip	Hebomoia glaucippe
9	Common Jezebel	Delias eucharis
10	Common Wanderer	Pareronia valeria
11	Common Grass Yellow	Eurema hecabe
	Family Nymphalidae	
12	Plain Tiger	Danaus Chrysippus
13	Stripe Tiger Butterfly	Danaus genutia
14	Common Crow	Euploea core
15	Common Sailor	Neptis hylas
16	Chocolate Pancy	Junonia iphita
17	Grey Pancy	Junonia atlites
18	Peacock Pancy	Junonia almanac
19	Blue Pancy	Junonia orithya
20	Danied Egg Fly	Hypolimnas misippus
21	Blue Oak Leaf	Kallima horsfieldii
22	Great Eggfly	Hypolimnas bolina
23	Danaid Eggfly	Hypolimnas misippus
24	Baronet	Euthalia nais
25	Common Baron	Euthalia aconthea
	Family Lycaenidae	
26	Common Cerulean	Jamides celeno
27	Plains Cupid	Edales pandava
28	Grass Jewel	Freyeria trochylus

Zoo planktons

Dr. Devdatta Lad of Wilson College & Dr. Shashikant Patil of Mithibai College had conducted study with an aim to analyze the species diversity of zooplankton and to determine the pollution status in the estuarine waters along the area of Bhayander and Naigaon. The present study was carried out at two stations Bhayander and Naigaon respectively.

Station 1: The first station at Bhayander is located 19° 19' N and 72° 51' E. (Google Earth 2008) The Bhayander is geographically surrounded by sea from the West side, by the estuary from the north side and by open and occupied land from the south and east side. The estuarine water is mainly from the buffering of Ulhas River with the Arabian Sea which amalgamates its water in the Thane creek and Vasai creek.

Station 2: The second station Naigaon is located 19° 20' N and 72° 51' E. (Google Earth 2008) Naigaon is a small town in the Thane District of the Maharashtra state and situated diagonally opposite to Bhayander on the another side of the estuary. The approximate distance between Bhayander and Naigaon is about 5 Km.

A total of 38 species of Zooplankton belonging to 9 classes have been recorded from both the Stations during the research study, the class Maxillopoda being dominant of all the classes. The population of Zooplankton was low in the Monsoon season with gradual increase in Post monsoon season and highest in the Pre monsoon season. The mean Shannon Wiener diversity index for Zooplankton at Station No.1 Bhayander and Station No.2 Naigaon were 3.35 ± 0.20 and 3.41 ± 0.15 respectively. Whereas Margalef Species Diversity Index for Station No.1 Bhayander and Station No.2 Naigaon were 4.12 ± 0.26 and 4.20 ± 0.21 respectively. The Staub et. al. scale of pollution in terms of species diversity index for Zooplankton revealed slight pollution at both the Stations Bhayander and Naigaon.

Staub et. al. (1970) proposed a different scale of pollution in terms of species diversity index that is being used to determine the pollution status of the overall estuarine area of Bhayander and Naigaon.

Shannon's Index 3.0 to 4.5 --Slight Pollution.

Shannon's Index 2.0 to 3.0 ---Light Pollution.

Shannon's Index 1.0 to 2.0 -- Moderate Pollution.

Shannon's Index 0.0 to 1.0 -- Heavy Pollution.

Biological Environment

Biodiversity and nature conservation

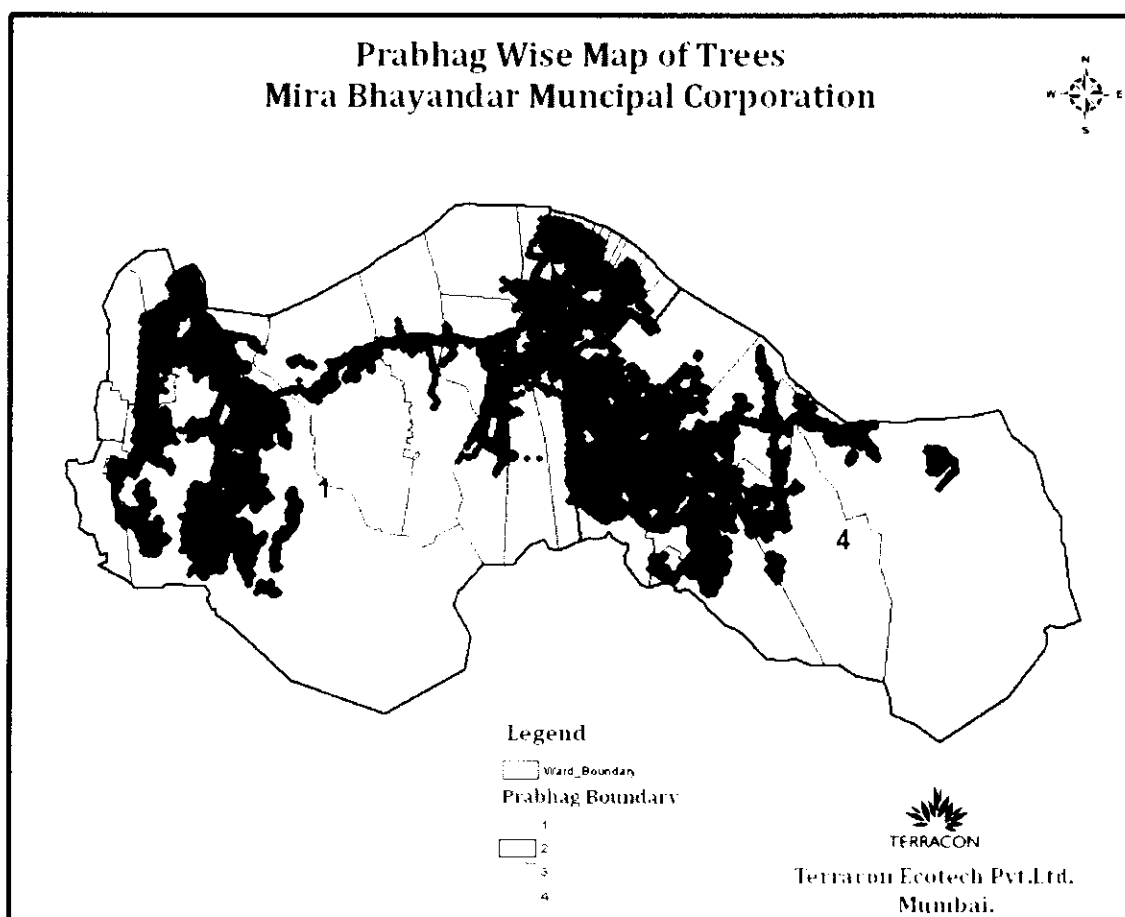


Table 4: list of Most Common Tree Species in MBMC

Sr. No.	Name of Trees	Number of Trees
1.	Amba	22784
2.	Subabhul	15765
3.	Naral	14658
4.	Asupalav (D)	12157
5.	Dhaman	8999
6.	Kala Umber	6482
7.	Son Mohar	6135
8.	Sitaphal	6118
9.	Shevga	5921
10.	Bottle Palm	5277

As per the survey conducted by M/s Terracon Eotech Pvt. Ltd. there are total 2,39,337 trees in whole of MBMC area. MBMC is divided in 4 Prabhag. The Trees in Prabhag I is 1,55,139, Pabhag II is 9070, Prabhag III is 23,360 & Prabhag IV is 51768.

Table 4: list of Most Common Tree Species in Prabhag 1

Sr. No.	Name of Trees	Number of Trees
1.	Amba	19033
2.	Subabhul	11,102
3.	Dhaman	8236
4.	Naral	7218
5.	Sitaphal	5152
6.	Shevga	4920
7.	Chinch	4741
8.	Katesavar	4719
9.	Khirni	4609
10.	Kala Umher	4480

Table 4: list of Most Common Tree Species in Prabhag 2

Sr. No.	Name of Trees	Number of Trees
1.	Asupalav (D)	1390
2.	Naral	1352
3.	Son Mohar	618
4.	Deshi Badam	459
5.	Saptarni	409
6.	Amba	364
7.	Gulmohar	363
8.	Bottle Palm	325
9.	Peru	282
10.	Supari	250

Table 4: list of Most Common Tree Species in Prabhag 3

Sr. No.	Name of Trees	Number of Trees
1.	Asupalav (D)	4397
2.	Naral	2520
3.	Son Mohar	2178
4.	Deshi Badam	1343
5.	Bottle Palm	1252
6.	Gulmohar	1141
7.	Saptarni	855
8.	Amba	730
9.	Kadu Neem	638
10.	Peru	610

Table 4: list of Most Common Tree Species in Prabhag 4

Sr. No.	Name of Trees	Number of Trees
1.	Asupalav (D)	4436
2.	Subabhul	4214
3.	Naral	3568
4.	Bottle Palm	2757
5.	Sag	2740
6.	Amba	2657
7.	Kala Umber	1938
8.	Son Mohar	1768
9.	Kharoti	1512
10.	Deshi Badam	1457

Sr. No.	Name of Road proposed for expansion /construction	Prabhag No.	Trees Affected
1	Mira Road (W) to Dahisar Link Road	I	38
2	Bhayander (W) to Subhashchandra Bose Maidan	I	19
3	Existing Uttan Road expansion	I	213
4	Uttan Road new alignment	I	--
5	Jesal Park (E) To Ghodbunder	II & IV	14
6	Road from Chheda Compound to Mira Road Station (East)	III	--
		Total	284

All existing vegetation and habitats within the existing roadside verges ie ROW will be removed for construction of roads. None of the habitats affected are of nature conservation importance and their loss is not considered to be significant for biodiversity.

Clearance of vegetation for construction of roads will result in the felling of trees of varying species, sizes and ages. Their loss is considered to constitute a minor impact on biodiversity. In a broader regional context this loss is of minor significance as displaced birds are likely to be able to find replacement sites relatively easily. The construction activities and the changes in traffic during operation are not expected to result in any significant impact on habitats or fauna of conservation importance, especially given the urban nature of the existing land use. In the

project area in the ROW of roads to be constructed there are no rare & endangered species of flora & fauna of economic significance which require management.

The construction of all roads does not have any impact on water bodies other than creek. The impact on the coastal area is dealt with in detail above. As the roads are being constructed on silt in CRZ I area including inter tidal zone the impact on this area will be minimised. Also impact on aquatic ecology including fisheries, their spawning and migration will be minimum.

As for terrestrial fauna, the project does not pass through any habitat of terrestrial fauna. Hence the issue of impact on terrestrial fauna does not arise. The proposed project does not envisage filling up of any existing water bodies. Hence the issue of impact on aquatic fauna also does not arise. During operation stage, the vehicular traffic on the roads will have minor impact on the ecological environment.

Construction Phase:

The laying of the roads will require felling of about 284 trees. Thus during construction phase of the project, significant adverse impact is anticipated on the ecological environment of the project corridor. There will be some displacement and cutting of trees along the roads with prior permission of the Tree Authority of MBMC. The compensatory tree plantation plan shall be prepared in consultation with the authority. The proposed project does not envisage filling up of any existing water bodies. Hence the issue of impact on aquatic fauna also does not arise. There are no endangered faunal species / birds found within the core zone.

Mitigation measures

Compensatory Tree Plantation

The compensatory tree plantation has been proposed in accordance with the MOEF circular 4-1/97-FC dated 18.2.98, which stipulates that for every tree cut two trees will be planted. In the proposed widening of the road about 284 trees are to be felled, hence about 568 trees need to be replanted along the entire stretch of the road. Following points need to be considered while planting the trees:

- Position of trees on either side to be fixed taking into account the ultimate developments of the roadway with regard to future widening.
- Trees to be sufficiently away from the edge of the carriageway so that they do not become safety hazards

- Shrubs and trees to be planted clear of the road side drains and other drainage structures
- During planting of the sapling adequate distance to be maintained between the adjacent trees
- Avenue plantation to be taken up to prevent the glare of sunlight, especially during morning and evening hours
- Tree guard should be prepared to protect the young sapling
- Ornamental plants, shaded plants species, grasses to be planted on the medians to effectively cut the glare of headlights

Accordingly in congested areas with limited available space, the roadside plantation should be restricted to a single row. The species selected are indigenous, fast growing with restricted canopy. In non-congested areas where there is no space constraint two staggered rows of trees will be provided. The species selected include a combination of indigenous, fast growing, big and small canopy trees such as *Acacia auriculiformis*, *Casuarinas equisetifolia*, *Pongamia pinnata*, *Alstonia scholaris*, *Thespesia populnea*, *Terminalia catappa* etc. Trees with ornamental and shade values such as *Albizia lebbeca*, *Delonix regia*, *Ficus*.

During pre-construction phase, the clearing of RoW will require felling of about 284 trees essentially from the roadside plantations. Trees falling within the alignment which are to be removed before commencement of construction shall be identified and approved by Project Implementation Agency. Prior permission from Tree authorities shall be obtained as laid out in the Tree Act. Compensatory plantation plan shall be prepared & executed in consultation with Tree Authority. Some trees will be transplanted as a mitigation measure. However, the Tree authority shall be consulted for identifying compensatory plantation area. The plantation along the Roads will compensate the loss of trees. Tree plantation is proposed all along the Roads. Out of 3-m width of Footpath, outer 0.5 m strip of land is reserved for tree plantation. Also this will add to the aesthetics of the road. Compensatory plantation on the landfill site will help to restore ecology and also stabilisation of the site.

Landscaping of the median has also been proposed. Along the medians flowering plants and shrubs that grow to a height of about 2 m shall be preferred. Plantation in the median will serve as a barrier against glaring headlight of traffic plying in the opposite direction. This will improve the aesthetics of the road.

During operation phase of the project, proper care of the landscaping and trees shall be taken up so as to achieve tree authority's guideline survival rate.

Compensatory Mangrove Plantation

The mangroves coming in the way during construction of road in mangrove area will have to be cut during construction of roads. Although stilt road has been proposed in mangrove area some mangroves will be cut during construction.

As per the high Court Directive of October 2005, mangrove destruction is totally banned in the state. Government owned lands under mangroves shall be declared as "protected forests". Privately owned lands to be declared / notified as "forests" In respect of Government lands, the Forest Department and other authorities of the State of Maharashtra shall take steps of protection and regeneration of the areas by:

- Removal of all obstructions that are impeding the growth of mangroves as also the impediments which restrict the flow of sea water in the mangrove areas;
- Wherever mangrove growth is found to be sparse (i.e. with forest density less than 0.4) taking necessary steps for rejuvenation

Mangrove locations having area more than 1000 sq meter is also required to have a buffer of 50 meters. Compensatory mangrove plantation has been proposed by MBMC in five times the mangrove area disturbed in lieu of mangroves destroyed during road construction. Permission of High Court has also been sought. The compensatory mangrove plantation is proposed in consultation with Conservator of Forests, Mangrove Cell. Permission under Forest Act 1980 will be sought for these projects. The details of affected mangrove area, proposed compensatory plantation area, area of road on stilt have been worked out.

Factors affecting mangrove restoration project

The factors that will be considered while undertaking mangrove plantation

- Soil stability and flooding pattern
- Elevation of the site
- Soil/ water salinity and freshwater input to the site
- Tidal and wave energy associated with the site
- Availability of propagules/ seed material
- Spacing and thinning of plants
- Presence of weeds
- Success of nursery techniques
- Monitoring the progress
- Incidence of propagule predation
- Cost of restoration
- Cooperation of the local inhabitants

The aspects that will be paid attention to while undertaking mangrove plantation are

- Identification of appropriate sites for mangrove cultivation (soil stability, flooding regime, elevation, extent of pollution)
- Selection of species/ species assemblages suitable for the soil and hydrological conditions of the site
- Quality of the planting material
- Adoption of an appropriate planting technique
- Reduction of predator pressure
- After-care practices
- Mechanisms to obtain local community participation and support for restoration

The following restoration procedure will be followed for mangroves in consultation with Conservator of Forests, Mangrove Cell.

- Conducting a thorough biophysical investigation and demarcating areas suitable for various species of mangrove vegetation
- Quantifying areas for raising mangrove plantation
- Demarcating areas where mangrove plantations have to be raised by canal method and by direct planting
- Undertaking land preparation activities including digging of canals wherever needed to raise mangrove plantation
- selection of suitable site for linking the main canal of the restoration site with natural creek
- Periodical monitoring of various parameters like soil salinity, texture, tidal amplitude in the area under restoration
- Establishing and maintaining nurseries of mangroves, if necessary
- Planting activities as per the demand of land prepared
- Monitoring the growth performance of the plantation area and casualty replacement activities.

