Executive Summary

Of

M/s INNOVASSYNTH TECHNOLOGIES (I) LIMITED

S. No.: 9-24, Wasarang 34-36, Khopoli, District: Raigad, Maharashtra

For

Public Hearing

Of

Proposed Expansion and Introduction of New Products in Synthetic Organic Chemical Industry

Consultant

Goldfinch Engineering Systems Private Limited

NABET Accredited EIA Consultant

Thane, Maharashtra

August-2017

EXECUTIVE SUMMARY

1.0 Introduction

Innovassynth Technologies (I) Ltd. (ITIL) offers knowledge-based R&D services, including custom synthesis, contract R&D, contract manufacturing and toll manufacturing at S. No.: 9-24, Wasarang 34-36. The factory is not located in approved industrial area. Present production capacity is 100 MT/month.

ITIL wishes to expand its present activities in its existing plant. Expansion will involve change in product quantity and addition of new product. Existing production is to be increased upto total 350 MT/month due to prevailing market condition.

The company has identified NUCLEOSIDES & NUCLEOTIDES as its niche area which are basic building blocks of DNA & RNA. Innovassynth have also earned reputation as a one of the leading manufacturer and suppliers of various protected Nucleosides globally and working as a partner for Process research with many pharma and drug discovery companies.

The company is involved in business with well-known companies in various fields like pharmaceuticals, drug discovery companies, perfumery, agrochemicals, and fine & specialty chemicals.

As per the Schedule attached to the EIA Notification SO 1533 dated September 14th, 2006 proposed project is classified in schedule of activities 5(f) and requires prior Environmental Clearance before setting up the industry. As the project is located in non - approved industrial estate of MIDC it is in category A and requires an EIA to be prepared to assess impacts due to proposal.

This EIA report has been prepared as per Terms of References allotted by Expert Appraisal Committee (EAC) (Industry-2) in their 24th Meeting held on 14th June 2017.

1.1 PROJECT DESCRIPTION

Proponent is proposing expansion of the manufacturing of synthetic organic chemicals in the existing S. No.: 9-24, Wasarang 34-36, Chinchwali, Khopoli Dist: Raigad, Maharashtra. The total production quantity will be 350 MT/month products, 2453 MT/month by-products. The total plot area is of 244872 Sq. M. The total project cost would be INR ~ 232.41 Crore.

Existing	Proposed	Total
79.41 Cr.	153.00 Cr.	232.41 Cr.

1.2 SITE LOCATION

The Existing manufacturing plant ITIL Ltd. is located at S. No.: 9-24, Wasarang 34-36, Chinchwali, Khopoli Dist: Raigad, Maharashtra.

GPS Location: (Lat. 18.799442^0 N & Long. 73.338014^0 E) with an elevation of 63 fts. above sea level (MSL).

1.3 EXTENT OF STUDY & STUDY COVERED

Environmental Impact Assessment report is prepared based on the baseline studies carried out during March, April and May 2017. The Environmental parameters such as ambient air, water, soil, noise, were those selected for study areas which are likely to be affected by the project. The study area is defined as an area within 10 kms radius around site as per the model ToRs specified by EAC, Delhi.

1.4 METHOD OF STUDY

Based on the MoEF guidelines studies were carried out and identified based on the nature of activities involved and their impacts caused on various environmental parameters. It subsequently suggests mitigation measures to be executed for safeguarding against any environmental degradation. Finally it suggests methods of implementing the environmental management plan.

2.0 PROJECT DETAILS

ITIL Ltd. has proposed to manufacture the following products.

Table 1.1: List of Products for Environmental Clearance

Sr. No	NAME OF PRODUCT	Existing Qty (MT/M)	Existing Product to be deleted (MT/M)	Existing Product to be Reduced (MT/M)	Existing Product to be Increased (MT/M)	Total Product QTY (MT/M)
1	**4–Fluoro Isoquinoline**	0.0084	--	0.0034	--	0.0050
2	**Isosulfan Blue (2,5–Disulfophenyl Isomer)**	0.0084	--	--	0.0016	0.0100
3	**(Diethoxy methyl)-2-Ethoxy benzene**	0.0840	0.0840	--	--	0.0000
4	**2,4-Dimethoxy Aniline**	0.1670	0.1670	--	--	0.0000
5	**2,6-Dimethyl phenyl isothiocyanate**	0.1670	0.1670	--	--	0.0000
6	**Benzoic acid,4-(4-Propyl-1-piperazinyl)**	0.1670	0.1670	--	--	0.0000

7	**2-(4-Morpholinyl)-8-Phenyl-[4H-1] -benzopyran-4-one**	0.0084	--	--	--	0.0084
8	**9,10-Dihydro-10[2,3di(hydroxycarboxyl)propyl]-9-oxa-10-phosphaphenanthrane-10-oxide(DDP)**	0.0420	0.0420	--	--	0.0000
9	**Cyclopropyl Methyl Bromide (CMB)**	0.0840	--	--	0.916	1.0000
10	**5′-ODMT-NiBu-deoxyguanosine-3′-(2-cyano ethyl N,N diisopropylamino) Phosphoramidite (dG Amidite)**	0.0420	0.0420	--	--	0.0000
11	**5′-ODMT-NBZ-deoxyadenosine-3′-(2-cyano ethyl N,N diisopropylamino) Phosphoramidite (dA Amidite)**	0.0420	0.0420	--	--	0.0000
12	**5′-ODMT-NBZ-deoxycytidine-3′-(2-cyano ethyl N,N diisopropylamino) Phosphoramidite (dC Amidite)**	0.0420	0.0420	--	--	0.0000
13	**5′-ODMT-NBZ-deoxythymidine-3′-(2-cyano ethyl N,N diisopropylamino) Phosphoramidite (dmt- T)**	0.0420	0.0420	--	--	0.0000
14	**3′-Amino-5′ OH Thymidine (Amino – T)**	0.0084	--	0.0079		0.0005
15	**Bis (n-butylcyclopentadienyl) Zirconium dichloride**	0.0420	0.0420	--	--	0.0000
16	**rac-Ethylene-bis(indenyl)Zirconium dichloride**	0.0420	0.0420	--	--	0.0000
17	**Substituted Triazine Derivative**	50.0000	--	--	25.00	75.0000
18	**Ethyl 2-Methyl-4-Pentenoate (EMPE)**	0.0833	--	0.0750	--	0.0083
19	**Ethyl-4-Pentenoate**	0.0833	--	0.0750	--	0.0083
20	**Norcamphor**	0.0166	--	--	--	0.0166
21	**5-Bromo-Indole**	0.3330	--	0.3030	--	0.0300
22	**4-Pentenoic Acid**	0.8333	--	--	1.1667	2.0000
23	**Methyl Tiglate**	0.0166	--	--	--	0.0166
24	**Ethyl-2-Methyl 3-4-Pentadienoate (EMPD)**	0.5000	--	0.4990	--	0.0010
25	**3-3 Dimethyl Cyclohexanone (DMCH)**	0.0833	--	--	0.9167	1.0000
26	**2-6 Diamino-9-(b-D-Ribo) Purine (DAP)**	0.0500	--	0.0450	--	0.0050
27	**DMT-MOET(4,4'-dimethoxy trityl)-(methoxyethyl-thymidine)**	0.0833	0.0833	--	--	0.000

28	**N-Bz-DMTMOEC (N-Benzoyl-(4,4'-dimethyoxytrityl)(methoxy ethyl)-cytidine**	0.0833	--	--	--	0.0833
29	**N-Bz-DMT-Dc (N-Benzoyl-(4,4'-Dimethyoxytrityl)-dooxy cytidine**	0.0833	0.0833	--	--	0.000
30	**N-Benzoyl – 3 – Tritylamino 5 Phosphoramidite 2 – deoxy Adenosine (dA)**	0.0040	--	0.0035	--	0.0005
31	**3 – Tritylamino 5 – Phosphoramidite N-Bz-Dc**	0.0040	--	0.0035	--	0.0005
32	**N – Isobutyryl – 3- Tritylamino 5 – Phosphoramidite 2 – deoxy Guanosine (dG)**	0.0040	--	0.0035	--	0.0005
33	**3 – Tritylamino 5 – Phosphoramidite Thymidine (dT)**	0.0040	--	0.0035	--	0.0005
34	**4-Methyl –2-Thiomethyl Pyrimidine**	0.4170	--	0.3770	--	0.0400
35	**4-Hydroxy isoleucine**	3.3330	--	3.2330	--	0.1000
36	**4-HEXYL RESORCINOL**	0.4160	--	--	1.584	2.0000
37	**N^2 Phenyl Acetyl Guanosine**	0.0416	--	0.0376	--	0.0040
38	**5' – ODMT, 2' – O – Cpep, 6N – Pivaloyl Adenosine**	0.0080	--	0.0070	--	0.0010
39	**5' – ODMT, 2' – O – Cpep, N^2 – Ph – Ac - Guanosine**	0.0080	--	0.0070	--	0.0010
40	**5' – ODMT, 2' – O – Cpep, 4 – N – Bz Cytidine**	0.0080	--	0.0070	--	0.0010
41	**5' – ODMT, 2' – O – Cpep, Uridine**	0.0080	--	0.0070	--	0.0010
42	**p-Nitro Phenyl Phosphate – Disodium Salt Hexahydrate**	0.0833	--	--	0.1167	0.2000
43	**p-Nitro Phenyl Phosphate – Ditris Salt**	0.0833	--	0.0733	--	0.0100
44	**5'-ODMT-2'MOE-T[5'-0 (4,4'-DIMETHOXY TRITYL) – 2'-0-(2-METHOXYETHYL) – THYMIDINE]**	0.0580	--	--	0.942	1.0000
45	**N – BZ – 5' – ODMT – 2' – MOE – 5 – Me – C 5'-0 (4,4'-DIMETHOXY TRITYL)–2'-0-(2-METHOXYETHYL) N^4 –BENZOYL–5-METHYL- CYTIDINE**	0.0300	--	--	0.97	1.0000
46	**2' – FLUORO CYTIDINE 5'-0-{4,4'-DIMETHOXY TRITYL)N^4-ACETYL-2'FLUORO CYTIDINE-3'-[C2-CYANOETHYL)-(N,N-DI ISOPROPYL)]-PHOSPHORAMIDITE**	0.0020	0.0020	--	--	0.000
47	**2' – FU AMIDITE 5'-0-(4,4'-DIMETHOXY TRITYL)-2'-FLUORO URIDINE-3'-[(2-CYANOETHYL)-(N,N-DI ISOPROPYL)]-PHOSPHORAMIDITE**	0.0020	--	--	--	0.0020

48	**5'-DMT-2'-OTBDMS-RNA PHOSPHORAMIDE AND DERIVATIVES**	0.0042	--	--	0.3958	0.4000
49	**EURO-5031 BLS DICYCLO PENTADIENEZERCONIUM DICHORIDE**	0.0420	0.0420	--	--	0.000
50	**2 CYANOPHENOL**	0.1670	0.1670	--	--	0.000
51	**CALONE [7-METHYL-3,4-DIHYDRO-2H-1,5-BENZO DIOXEPIN-3-1**	0.0084	0.0084	--	--	0.000
52	**SODIUM BETA GLYCERO PHOSPHATE**	1.6600	--	0.6600	--	1.0000
53	**7-BROMO 1HEPTENE**	0.2200	--	--	3.78	4.0000
54	**2,2 BIS [-(2INDENYL)BIPHENYL]ZICRONIUM(IV) CHLORIDE**	0.0100	--	--	0.04	0.0500
55	**L-METHIONINE SULFOXIME**	0.0100	--	--	--	0.0100
56	**4,4'--DIMETHOXYTRITYL CHLORIDE (DMT-CL)**	0.1500	--	--	0.85	1.0000
57	**AD-Lactone**	0.3000	0.3000	--	--	0
58	**1-CYANO CYCLOBUTANE-1,2-DICARBOXYLIC ACID DIMETHYL EASTER / TRANSDIACID**	0.2000	--	--	0.2	0.4000
59	**5'-DMT-C-ETHYL N-PROTECTED NUCLEOSIDES AND PHOSPHORAMIDITES**	0.0100	0.0100	--	--	0.0000
60	**5'-DMT-C-ETHYL N-PROTECTED NUCLEOSIDE AND PHOSPHORAMIDITE**	0.0100	--	--	0.0204	0.0304
61	**NAP SUGAR**	0.0500	--	--	0.95	1.0000
62	**ENA -PROTECTED NUCLEOSIDE & PHOSPHORAMIDITE**	0.0100		0.0090	--	0.0010
63	**E-TETRACETATE**	0.0500	--	--	0.15	0.2000
64	**TAC PROTECTED NECLEEOSIDE & PHOSPHORAMIDITE**	0.0100	--	--	0.04	0.0500
65	**5'-DMT-2'-MOE PROTECTED NUCLEOSIDE & PHOSPHORAMIDITE**	0.0200	--	--	0.38	0.4000
66	**5'-DMT-2'-O-METHYL PROTECTED NUCLEOSIDE & PHOSPHORAMIDITIES**	0.0100	--	--	0.19	0.2000
67	**ALLOFURANOSE SUGAR**	0.0100	--	--	--	0.0100
68	**TINUVIN -400**	27.865	--	--	72.1352	100.000
69	**N-Methyl 4 chloro piperridine HCL**	1.0000	1.0000	--	--	0.00
70	**Syringaldehyde**	2.0000	2.0000	--	--	0.00
71	**Indoline**	2.0000	2.0000	--	--	0.00

72	**2 methyl Sulphonyl 4,6 Dimethoxy Pyrimidine**	3.0000	3.0000	--	--	0.00
73	**O- Methyl Isourea Hemisulphat6e**	2.0000	2.0000	--	--	0.00
74	**Beta-Methyl Acid (BMA)**	2.0000	2.0000	--	--	0.00
	Total	**100.5765**	**13.575**	**5.4402**	**110.7451**	**192.314**
New Products to be added						
75	**P-Anisyl Propanal**	0.0000	0.000	0.000	0.000	4.000
76	**ANETHOL**	0.0000	0.000	0.000	0.000	30.00
77	**5'-ODMT-DEOXYNUCLEOSIDES, PHOSPHORAMIDITES AND SUCCINATE SALTS**	0.0000	0.000	0.000	0.000	0.200
78	**DMT-LNA-NUCLEOSIDES & PHOSPHORAMIDITES**	0.0000	0.000	0.000	0.000	0.100
79	**GALNAC ACYCLIC SUCCINATE**	0.0000	0.000	0.000	0.000	0.0028
80	**NOOTKATONE**	0.0000	0.000	0.000	0.000	0.4000
81	**4-AMINOBENZONITRILE**	0.0000	0.000	0.000	0.000	0.1660
82	**Diethyl L-(+) tartrate**	0.0000	0.000	0.000	0.000	0.1660
83	**DL -LACTIDE**	0.0000	0.000	0.000	0.000	0.0083
84	**DIETHYLAMINO MALONATE HCl**	0.0000	0.000	0.000	0.000	0.2500
85	**ACRYLAMIDE PURIFIED**	0.0000	0.000	0.000	0.000	0.4000
86	**ETHYLENEDIAMINETETRAACETIC ACID METAL CHELATE SALTS**	0.0000	0.000	0.000	0.000	0.0030
87	**SODIUM SELENITE PENTAHYDRATE**	0.0000	0.000	0.000	0.000	0.0030
88	**2,4Dihydroxy Benzophenone**	0.0000	0.000	0.000	0.000	89.237
89	**Peonile**	0.0000	0.000	0.000	0.000	19.000
90	**R&D Products (Intermidiate chemicals)**	0.0000	0.000	0.000	0.000	0.4000
91	**4,5-Dichloro pthalic acid**	0.0000	0.000	0.000	0.000	0.0083
92	**4-Tert-butylphenoxyAceticAcid**	0.0000	0.000	0.000	0.000	1.0000
93	**6-Bromo-Iso-indolin-1-one**	0.0000	0.000	0.000	0.000	0.0083
94	**Trans aconiticAcid**	0.0000	0.000	0.000	0.000	0.0083
95	**2,2 BIS [-(2INDENYL)BIPHENYL]ZICRONIUM(IV) CHLORIDE ON SILICA SUPPORT**	0.0000	0.000	0.000	0.000	2.500
96	**N,N-Dimethylbenzamide (DMBA)**	0.0000	0.000	0.000	0.000	1.0000
97	**4-(methylamino)pentan-2-ol dibenzoate (AB)**	0.0000	0.000	0.000	0.000	1.0000

98	**9,9-bis(methoxymethyl)fluorene (FLU)**	0.0000	0.000	0.000	0.000	1.0000
99	**2-AminoBenzonitrile**	0.0000	0.000	0.000	0.000	1.0000
100	**GAFL-158**	0.0000	0.000	0.000	0.000	5.0000
101	**3,5-Bis(2-Cyanoprop-2-yl)benzyl bromide Anastrazole intermediate**	0.0000	0.000	0.000	0.000	0.0083
102	**3,5-Bis(2-Cyanoprop-2-yl)Toluene Anastrazole intermediate**	0.0000	0.000	0.000	0.000	0.0083
103	**2,2'-Azobis(2-methylpropionamidine)dihydrochloride**	0.0000	0.000	0.000	0.000	0.0100
104	**CMPT**	0.0000	0.000	0.000	0.000	0.0400
105	**CMIMT**	0.0000	0.000	0.000	0.000	0.0400
106	**MTSCNE**	0.0000	0.000	0.000	0.000	0.1000
107	**ONT-7-D & ONT-7-L**	0.0000	0.000	0.000	0.000	0.1000
108	**UNA Phosphoramidites & Derivatives**	0.0000	0.000	0.000	0.000	0.0400
109	**Morpholino Phosphoramidites & Derivatives**	0.0000	0.000	0.000	0.000	0.1000
110	**Chiral Phosphoramidites & Derivatives**	0.0000	0.000	0.000	0.000	0.1000
111	**5'-ODMT-2′ OMe NiBu-Guanosine O6 CE**	0.0000	0.000	0.000	0.000	0.0840
112	**Bis TAc dG**	0.0000	0.000	0.000	0.000	0.0840
113	**5'-ODMT-NiBu-deoxycytidine**	0.0000	0.000	0.000	0.000	0.0500
114	**5'-Biotin Phosphoramidite**	0.0000	0.000	0.000	0.000	0.0010
115	**5-Iodo dC**	0.0000	0.000	0.000	0.000	0.0008
116	**2'-Fluoro-GiBu-3'-CEPA**	0.0000	0.000	0.000	0.000	0.0008
117	**5'-ODMT-N6-Bz-2'-Fluoro Adenosine-3'-OCEPA**	0.0000	0.000	0.000	0.000	0.0008
118	**5'ODMT-NiBu-dG (O6 CE)**	0.0000	0.000	0.000	0.000	0.0500
119	**Ethyl-2,2-difluoropropionate**	0.0000	0.000	0.000	0.000	0.0416
	Total					**157.686**
	Total	**100.5765**	**13.575**	**5.4402**	**110.7451**	**350**

In the process of manufacture to be followed, following quantum of by products are expected to be generated:

By- Production capacity

Sr. No.	By-Products	Existing (TPM)	Proposed (TPM)	Total (TPM)
1	Hydrochloric Acid 30%	43.00	465.00	508.00
2	Sulphuric Acid 66%	85.00	100.00	185.00
3	Mixed Solvents	133.50	426.50	560.00
4	Aqueous Aluminium Chloride	303.00	897.00	1200.00
	TOTAL	**564.50**	**1888.50**	**2453.00**

2.1 POWER/ENERGY REQUIREMENTS

The proposed project is expected to require electricity as below

Existing power: 2.5 MW

Proposed Power: 1.5 MW

Total Power requirement post expansion will be 4.0 MW

MSEDCL will supply required power for the project.

Number and capacity of DG set to be used

Capacity KVA	Number off	Fuel requirement kg/per hour/each	Fuel
1000	2	185 kg/hr	HSD
500	1	95 kg/hr	
1000 KVA(Proposed)	2	185 kg/hr	

DG sets are provided with acoustic enclosure.

2.2 WATER CONSUMPTION, EFFLUENT GENERATION AND TREATMENT SCHEME

Water Balance

Particulars	Consumption (CMD)			Loss (CMD)			Effluent (CMD)		
Water requirement	**Existing**	**Proposed**	**Total**	**Existing**	**Proposed**	**Total**	**Existing**	**Proposed**	**Total**
Domestic	20	22	42	04	04	08	16	18	34
Industrial Processing	85	172	257	42	91	133	43	81	124
Cooling tower & Boiler	183	200	383	173	180	353	10	20	30
Floor wash, vessel wash and Vaccum Pump	75	75	150	03	04	07	72	71	143
Gardening	210	--	210	210	--	210	--	--	--
Total	573	469	1042	432	279	711	141	190	331
Water recycle	--	--	34+288 +24 = 346	--	--	--	--	--	--
Fresh water requirement	--	--	696	--	--	--	--	--	--

Fresh water requirement of the project for domestic and industrial activity during operation phase will be 1042 CMD. After recycling of water it will be reduced to 696 CMD. Water is drawn from Patalganga River. Fresh water is available throughout the year.

2.3 Liquid Effluent generation

The total effluent generation will be 297 CMD. Effluent from high TDS stream is treated in existing MEE - I, then condensate of MEE - I and other streams from process will be treated in conventional ETP consisting of primary, two stage secondary and tertiary treatment. This will be further treated by RO-I for permeate and will be recycled and

effect zero liquid discharge (ZLD). Also cooling tower and boiler blow down will be fed to RO-II, permeate will be recycled and reject of RO-I and RO-II will be fed to MEE - II.
The total sewage generation will be 34 CMD. STP will be provided at capacity 41 CMD. Treated water used for gardening.

2.4 Trade and Domestic effluent treatment Scheme

Multi Effect Evaporator - I – For high TDS stream from process

High TDS stream from the process is treated in existing MEE-I. The solids generated from MEE-I are sent to MWML, Taloja.

Effluent Treatment Plant

- **Primary Treatment**

The system will be designed to treat 325 m^3/day of waste water. Wastewaters from different streams of process along with wastewater from cooling tower, boiler blow down etc. will be collected in the Equalization Tank and air stripped. This effluent will then be pumped to the Flash Mixer where it will be dosed with PAC for coagulation. Flash Mixer will be followed by a flocculator where poly will be dosed for bigger flock formation. This effluent will overflow into the settling tank where the solids will settle down and will be removed.

- **Secondary (Aerobic) Treatment:**

The neutralized effluent will enter the bioreactor. In the bio reactor, dissolved organic material is degraded by the micro–organisms present in the bio reactor. Oxygen required for the oxidation of organic matter will be provided by means of proposed diffuser aeration system which will mix the contents of the bio-reactor also. The mixed liquid will overflow into Secondary Settling Tank (SST).
In the secondary settling tank, solid-liquid separation takes place and solids i.e. biomass will settle at the bottom of the tank. Settled biomass will be recycled to the bio reactor for maintaining the MLVSS concentration by using proposed sludge recycle pumps and excess biomass will be wasted periodically to the sludge sump. Two stage treatments are proposed where the overflow from the 1^{st} stage clarifier will enter the 2^{nd} stage bioreactor where the non-degraded organics from the 1^{st} stage bioreactor will be treated. The clear overflow from the 2^{nd} stage Secondary Settling Tank will be collected in the intermediate sump.

- **Tertiary Treatment:**

The clear effluent from the intermediate sump will be pumped by tertiary Feed pumps through the pressure sand filter (PSF) & activated carbon filters. The final treated effluent will be collected in the final collection tank from where it will be fed to RO - I.

- **Reverse Osmosis - I (RO - I)**

Reverse Osmosis is at present a proven technology used to recover good quality water for process use. The treated effluent from ETP will be passed through RO-I where the dissolved solids are separated in the form of Reject & treated effluent free from dissolved solids (Permeate – 217 CMD) is utilized for cooling tower and boiler fed. Reject of RO - I (54 CMD) shall be fed to the MEE-II. **(Note: Initially we will install RO-1 of 220CMD and later will add one more RO of suitable capacity depending upon our effluent load)**

- **Reverse Osmosis - II (RO - II) – For cooling tower and boiler blow down**

Reverse Osmosis - II is at present a proven technology used to recover good quality water for process use. The blow downs from utility will be passed through RO - II of capacity 30 CMD where the dissolved solids are separated in the form of Reject & treated effluent free from dissolved solids (Permeate - 24CMD) is recycled. Reject of RO - II (06 CMD) shall be fed to the MEE-II.

- **MEE - II for RO reject treatment:**

For RO I & RO II reject will be fed to MEE-II of capacity 40 CMD which will be installed in first Phase & if required we will install another MEE of suitable capacity based on our increase in effluent load.

- **Sludge Handling:**

Primary sludge, excess biomass from the secondary treatment and backwash water from PSF will be collected in the sludge sump. From the sludge sump the sludge will be pumped to the filter press for dewatering. The solid cake from the filter press will be sent for disposal to Hazardous waste disposal site at MWML, Taloja. The filtrate from the Filter press will be drained to the collection tank.

- **Treatment Scheme for Domestic Wastewater**

For treatment of sewage, we will provide sewage treatment plant of capacity 41 CMD.

3.0 BASELINE ENVIRONMENT

Baseline environment of the study area incorporates the description of the various existing environmental settings within the area encompassed by a circle of 10 km radius around the proposed project site.

The baseline data is collected for the period March, April and May 2017. The primary data is collected to establish baseline scenario for the micro meteorology, ambient air quality, soil, water (surface and ground) quality, and noise levels. Table 1.4 illustrate Air, Water, Soil and Noise monitoring locations and specific parameters of significance. The samples were collected from various locations around the periphery of the plant. The sampling details have mentioned in the below table.

Table 1.4: Sampling Locations

Air Monitoring

AAQ Station	Sampling Location	Aerial distance (Km)	Direction from Project site	Co-ordinates	
				Latitude	Longitude
A1	Project site	--	--	18.802332^0	73.335512^0
A2	Wasrang	1.0	SE	18.798458°	73.340037°
A3	Anand Nagar	1.0	NW	18.807661°	73.326721°
A4	Near Boiler	--	--	18.802277°	73.335051°
A5	Vihari	2.0	SE	18.790985°	73.346668°
A6	Halkhurd	3.0	NW	18.813731°	73.313556°
A7	Near MEE	--	--	18.800253°	73.335637°
A8	Khopoli	2.0	SE	18.787371°	73.340894°
A9	Shengaon	2.0	NE	18.820300°	73.338128°
A10	SajGaon	4.0	SW	18.790110°	73.309318°

Noise Monitoring

Sr. No.	Location	Direction
N1	On Factory Site (Main Gate)	W
N2	On Factory Site – (Solvent Tank Area)	S
N3	On Factory Site (MPP Plant)	E
N4	On Factory Site (ETP Plant)	N
N5	100 m from Project Site	SW
N6	200 m from Project Site	SW
N7	300 m from Project Site	SW
N8	400 m from Project Site	SW
N9	100 m from Project Site	NW
N10	200 m from Project Site	NW
N11	300 m from Project Site	NW
N12	400 m from Project Site	NW

Surface Water Sampling

Ground water Station	Sampling Location	Aerial distance (Km)	Direction from Project site	Co-ordinates	
				Latitude	Longitude
SW-1	Vireshwar Lake	1	E	18.785118°	73.350919°

River Water Sampling

River water Station	Sampling Location	Aerial distance (Km)	Direction from Project site	Co-ordinates	
				Latitude	Longitude
RW-1	Patalganga River - Factory upside	0.1	E	18.798414	73.338244
RW-2	Patalganga River - Factory Downside	0.1	W	18.803097	73.331401
RW-3	Patalganga river Upstream	2	E	18.786724	73.352277
RW-4	Patalganga river Downstream	1	W	18.802214	73.322946

Ground Water Sampling

Ground water Station	Sampling Location	Aerial distance (Km)	Direction from Project site	Co-ordinates	
				Latitude	Longitude
	WTP Sample onsite	--	--	18.801075°	73.333637°
GW-1	Hal Khurd Village Well water	3	NW	18.810451°	73.316407°
GW-2	Takai Village Borewell water	4	NE	18.796301°	73.310418°
GW-3	Shedavli Village Well water	1	NE	18.811896°	73.327740°
GW-4	Shengaon Village Well Water	2	NE	18.819385°	73.333568°
GW-5	Shengaon Village BoreWell Water	2	NE	18.820373°	73.338128°
GW-6	Dheku Village Well Water	4	NW	18.793087°	73.298680°
SW-7	Khopoli Village Borewell Water	2	SE	18.787330°	73.340840°
SW-8	Wasarang Village Borewell water	1	SE	18.778250°	73.340110°

Soil sampling

Soil Station	Sampling Location	Aerial distance (Km)	Direction from Project site	Co-ordinates	
				Latitude	Longitude
S1	Near Fuel Storage Area	---	--	18.802139°	73.334729°
S2	Near ETP	--	--	18.802191°	73.336663°
S3	Near Tank Farm Old	--	--	18.799201°	73.336578°
S4	Near Main Gate	--	--	18.801394°	73.333024°
S5	Hal Khurd	3.0	NW	18.813731°	73.313556°
S6	Sajgaon	4.0	SW	18.790110°	73.309318°
S7	Anand Nagar	1.0	NW	18.807661°	73.326721°
S8	Wasarang	1.0	SE	18.798458°	73.340037°
S9	Shengaon	2.0	NE	18.820300°	73.338128°
S10	Khopoli	2.0	SE	18.787371°	73.340894°

3.1 AMBIENT AIR QUALITY

Ambient air was sampled at 10 locations selected and each station was sampled for continuously 24 hours in each month. Parameters monitored were Particulate matter (PM_{10} and $PM_{2.5}$), NO_x and SO_2. Ambient air was found to be within the prescribed regulatory limits. Within study area the average Ambient air quality is shown below:

AAQ Name	Name of Village (s)	PM_{10} ($\mu g/m^3$)				$PM_{2.5}$ ($\mu g/m^3$)				NOx ($\mu g/m^3$)			
		Max.	Min.	Avg.	98th Per	Max.	Min.	Avg.	98th Per	Max.	Min.	Avg.	98th Per
A1	Project site	56.8	47.2	50.47	55.78	31.5	23.7	27.62	31.13	21.79	16.03	19.76	21.77
A2	Wasrang	38.1	28.6	34.49	37.82	26.4	18.6	21.32	25.48	19.12	14.7	17.55	19.07
A3	Anand Nagar	35.4	30.4	32.87	35.26	15.2	10.1	12.92	15.2	21.96	15.48	20.24	21.08
A4	Near Boiler	55.3	24.3	51.1	54.84	23.7	19.4	21.59	23.56	25.02	19.63	23.02	24.76
A5	Vihari	71.8	63.8	67.59	70.88	29.7	23.6	27.07	29.65	19.9	13.91	18.18	19.77
A6	Halkhurd	58.3	50.3	56.10	58.3	17.4	12.6	15.05	17.4	21.49	16.05	20.02	21.48
A7	Near MEE	54.8	49.3	52.60	54.75	23.7	17.8	20.17	23.24	22.47	16.03	20.87	22.43
A8	Khopoli	35.4	26.3	30.90	34.80	25.4	21	22.84	25.35	23.39	18.07	21.43	23.16
A9	Shengaon	66.4	61.3	64.23	66.30	16.3	11.6	13.99	16.20	21.84	17.27	20.39	21.78
A10	SajGaon	48.6	42.8	45.43	48.37	26.3	19.1	22.43	25.38	23.3	17.22	21.64	23.27
	CPCB Norms	***100***				***60***				***80***			

AAQ Name	Name of Village (s)	SO_2 ($\mu g/m^3$)				Ammonia ($\mu g/m^3$)				H_2S ($\mu g/m^3$)			
		Max.	Min.	Avg.	98th Per	Max.	Min.	Avg.	98th Per	Max.	Min.	Avg.	98th Per
A1	Project site	29.72	22.74	27.04	29.67	3.51	0.45	3.02	3.48	1.53	0.18	0.74	1.42
A2	Wasrang	37.94	23.78	27.37	34.17	2.69	1.77	2.26	2.68	2.06	0.82	1.38	1.94
A3	Anand Nagar	35.18	23.11	25.88	32.24	4.63	3.75	4.16	4.55	1.28	0.36	0.72	1.27
A4	Near Boiler	28.35	22.09	24.92	28.18	2.08	0.98	1.54	1.99	6.31	3.98	5.12	6.29
A5	Vihari	29.95	23.65	27.71	29.92	5.18	2.97	3.47	4.53	2.23	0.75	1.51	2.21
A6	Hal khurd	29.28	23.53	26.49	28.75	4.25	3.36	3.74	4.17	2.76	0.19	0.40	1.68
A7	Near MEE	28.89	23.53	26.49	28.75	3.81	2.98	3.36	3.76	4.1	2.18	2.81	3.82
A8	Khopoli	30.87	23.78	27.68	30.65	4.26	2.2	3.66	4.23	4.71	3.1	3.82	4.66
A9	Shengaon	30.02	24.5	27.04	29.78	2.72	1.86	2.29	2.71	ND	ND	ND	ND
A10	SajGaon	31.24	24	28.21	30.01	3.23	2.11	2.55	3.07	0.46	0.03	0.25	0.46
	CPCB Norms	***80***				**80**				**400**			

3.2 WATER AND HYDROLOGY

Surface and ground water (Well and Bore well water) were sampled at 9 stations respectively. More than 20 Parameters were monitored and found to be within the prescribed regulatory limits.

3.3 NOISE

Ambient Noise levels in the study area were recorded to be within the limits stipulated by regulatory limits in the project area. The equivalent Noise levels during day and night time within study area are shown below:

Sr. No.	Location	Ambient Noise Level		Test Method
		Day Leq(A)	Night Leq(A)	
1	On Factory Site (Main Gate) – W	57.5	44.8	IS 9989-1981 Reaffirmed 2001
2	On Factory Site – (Solvent Tank Area) - S	55.7	48.2	
3	On Factory Site (MPP Plant) -E	59.4	51.5	
4	On Factory Site (ETP Plant) -N	68.2	55.5	
5	100 m from Project Site (SW)	58.5	51.0	
6	200 m from Project Site (SW)	51.3	42.0	
7	300 m from Project Site (SW)	51.2	42.0	
8	400 m from Project Site (SW)	52.5	42.0	

9	100 m from Project Site (NW)	47.6	42.0	
10	200 m from Project Site (NW)	52.8	41.6	
11	300 m from Project Site (NW)	53.7	43.9	
12	400 m from Project Site (NW)	53.5	43.2	
	Limits	**75.0**	**70.0**	

3.4 FLORA & FAUNA

Summary of habitat diversity survey:

- Type of the natural habitat in the actual project location: Characteristic of the urban, industrial landscape.
- Type of natural ecosystems: moist to dry deciduous forests, agricultural land and hilly regions
- Protected areas near the proposed project site: None
- Incident of wild animal tress passing in the actual project site: None

Floristic Diversity:

The floristic analysis is necessary for knowing the composition of plant species. The floristic survey was carried out in the project area. Overall 344 plant species belonging to 84 families and 262 genera have bee1n recorded. Flowering plants showed highest number of species (344). Out of total species reported, 12 (3.51%) are endemic to India whereas only 01 (0.29%) is endemic to Maharashtra. Only 01 (0.29%) species is under endangered category; 03 (0.88%) are at Lower Risk category, whereas 05 (1.46%) are in vulnerable category (Flora of Maharashtra, BSI).

Summary of the Floristic Survey:

Number of species observed in the 1 km radius range from the site: 97

Number of species observed in the 5 km radius range of the site: 248

Number of species in the 10 km radius range of the site: 361

Dominant Species: *Terminalia elliptica, Bombax ceiba, Anogeissus latifolia, Lagerstroemia parviflora, Mangifera indica, Sterculia urens, Ficus racemosa, Olea dioica, Holoptelia integrifolia,* and *Lagerstroemia lanceolaria.*

Rare, Endangered, vulnerable or protected species encountered on the proposed project site: None.

Rare, Endangered, vulnerable or protected species encountered in 5km range area: 10 (Vulnerable-5, Lower Risk-3, Endangered-1, and Endemic to Maharashtra-1)

Numbers of trees per hectare: 373.

This area was rich floristically and represents few (20) endemic species (endemic to India), however there was no locally endemic species. *Achyranthes coynei* is the only species that is endemic to Maharashtra.

There were no ecologically sensitive areas like national parks or wildlife sanctuaries, Tiger Reserves, Elephant Reserves, Turtle Nesting Ground and Core Zone Biosphere Reserve within 10 km radius from the proposed site. However, the Reserved Forest exists within this range. It was mainly open or dense mixed forest, predominated by *Terminalia, Anogeissus, Mangifera, Ficus, Bombax, Lannea, Olea, Butea, Bridelia,* and *Dalbergia*.

Faunal Diversity:

Aves:

In the surrounding areas within 10 km range of the site in total 23 species of birds were encountered. In areas falling within 1 km range of the project 18 species of birds were observed during the study. The observations were made based on direct sightings and bird calls. In the observed list of birds, none of the species were classified as Endangered or rare.

Herpeto-fauna:

During the survey, 6 species of reptile and 2 species of amphibians were found in areas within 1 km from the project site. There is no further addition within 10 km radius from the project site. Most of the reptile species were observed near the forest patch.

Mammals:

Mammals like Common Langur, Barking Deer, Porcupine, Hyena, Leopard, Palm Squirrel, Common Squirrel, Domestic Asian water buffalo, Domestic dogs and domesticated cows were seen in the study area.

Domesticated animals:

At some open spaces near the project location, domesticated/ Urban diversity specific animals such as a Stray dogs (Canis lupus), Domestic goat (Capra sp.), Domestic Asian water buffalo (Bubalus bubalis) and domestic cows (Bos primigenius indicus) are common around the proposed project site.

Summary of the study:

Vegetation diversity status of the site: The proposed site has the plantations of exotic and invasive plant species along with few native trees. It is dominated by avenue tree species.

Ecological and biodiversity status of the site: There are no rare, endangered or legally protected species within 5 km range from the project site.

Ecological richness and value of the actual project site location: Low.

Ecological richness of areas within 10 km range: Moderately rich ecology and fragmented areas.

National parks and sanctuaries within 10 km: None.

Protected place within 10 km: None.

3.5 POPULATION

Khopoli Town

Khopoli is a Municipal Council city in district of Raigarh, Maharashtra. The Khopoli city is divided into 26 wards for which elections are held every 5 years. The Khopoli Municipal Council has population of 71,141 of which 37,305 are males while 33,836 are females as per report released by Census India 2011.

Population of Children with age of 0-6 is 8278 which is 11.64 % of total population of Khopoli (M Cl). In Khopoli Municipal Council, Female Sex Ratio is of 907 against state average of 929. Moreover Child Sex Ratio in Khopoli is around 920 compared to Maharashtra state average of 894. Literacy rate of Khopoli city is 87.62 % higher than state average of 82.34 %. In Khopoli, Male literacy is around 91.56 % while female literacy rate is 83.27 %. Khopoli Municipal Council has total administration over 16,266 houses to which it supplies basic amenities like water and sewerage. It is also authorize to build roads within Municipal Council limits and impose taxes on properties coming under its jurisdiction.

Source: Census Report 2011

Table 2.1 Vital Statistics of Khopoli Town-

Khopoli Town	Total	Male	Female
Population	71,141	37,305	33,836
Children (0-6)	8278		
Average Literacy (%)	87.62	91.56	83.27
Sex ratio	**907**		
Child Sex ratio	**920**		

Source: Census Report 2011

3.6 LAND USE PLANNING

The land is located in a Non- industrial area. The total plot area is 244872 Sq.m.

3.7 PUBLIC AMENITIES

In existing site many basic facilities like uninterrupted water supply, Power and Road Network & solids disposal facility if feasible are available. This site is near to city area and has safe transportation, less need of utilities, less constructing buildings and roads, less fuel, less water with optimization of infrastructure and networking with CHWSTDF (Common Hazardous Waste Storage Treatment and Disposal facility), MWML, Taloja in vicinity established with support of MPCB.

4.0 ENVIRONMENTAL ASPECTS

4.1 AMBIENT AIR

The source of Air emission would be from the industrial Boiler stack and Process emissions from various plants. The flue gas emission from briquette boiler will be released through stack with adequate height and process emissions through scrubbers with stacks above the height of the buildings.

4.2 WATER RESOURCES

Fresh water requirement of the project for domestic and industrial activity during operation phase will be 1042 CMD. After recycling of water it will be reduced to 696 CMD. Water is drawn from Patalganga River. Fresh water is available throughout the year.

4.3 NOISE LEVELS

- The noise levels are below MPCB prescribed limits. There would be no change due to the proposed activity. All operating personnel are well acquainted with their respective operations and personnel protection equipment's will be provided to the operators in utility area.
- In house monitoring will be continued to be done regularly inside and outside the factory. The noise levels will always be within Maharashtra Pollution Control Board limits for industrial activity.
- Proper noise barriers, acoustic enclosures are provided on noise generating equipment's like D G sets.
- No increase is anticipated at any of the Noise Monitoring locations or surrounding villages / area due to this proposal implementation.

4.4 SOIL/LAND QUALITY

The project proponents have taken all the precautions to make its solid waste are as impervious to water and leachate migration. There will be no liquid effluent discharge on land. This will avoid soil contamination. It follows that soil quality will not be adversely impacted by proposed production activity. The unit set up is in industrial area hence no change in land use.

4.5 ECOLOGICAL ENVIRONMENT

Following mitigation measures are advised to minimize the impact on the surrounding environment:

- The waste water from process plant should be treated in MEE, ETP and RO to achieve Zero Liquid Discharge (ZLD).
- Hazardous wastes which are generated from process and effluent treatment plant should be stored at dedicated storage places and regularly sent to CHWTSDF for disposal.
- Air emissions should be within the prescribed standards of CPCB, Air pollution control equipment's (stack of appropriate height) should be installed to minimize the pollution at source.
- Green belt provided to minimize the impact of noise on surrounding environment. Native species dominated green belt must be created and maintained to enhance faunal diversity in and around the project area.

4.6 SOCIO ECONOMIC IMPACT

The socio economic status of the site as a whole was observed and noted as reported by the people in nearby villages. The industries have positively contributed to the growth and development of the region. No specific adverse socio economic impact due to ITIL was noticed or reported.

4.7 RISK ASSESSMENT

Risk Assessment Methodology

Risk assessment Methodology followed in preparation of this report is as per Technical EIA Guidance Manual for Synthetic Organic Chemicals, prepared for the Ministry of Environment and Forests Government of India.

HAZOP STUDY

The methodology used as per Hazard Identification and Hazard Analysis Techniques of Hazard Identification and Risk Analysis – Code of Practice IS 15656: 2006. Hazard are identified and each identified hazard evaluated on the scale of 1 to 5 for severity and probability that revels risk level for each identified hazard on the of scale 1 to 25 using the hazard rating matrix.

Node 1	Tank Farm
Node 2	Friedel craft reaction products
Node 3	Acylation products
Node 4	Condensation products
Node 5	Reduction products
Node 6	Alkylation products
Node 7	Organometal products
Node 8	Oxidation products
Node 9	R & D Products
Node 10	Solvent Recovery
Node 11	ETP

Risk mitigation measures

1 PP proposed to relocate Flammable solvent Tank farm from Block location no 19 near HT transmission line to proposed new tank farm.

2 Ensure any organic contaminated water generated during fire fighting operations,

sprinkler operation, accidental spill / floor washing at plant and parking locations not entering storm drain or percolating in soil or water bodies.

3 Prepare SOP for vehicles, earthmoving machinery, cranes movements during Demolition and construction activity near flameproof solvent storage / handling areas and near HT transmission line.

4 Maintain hydrogen inventory up to 0.09 Mt.

5 Minimize or restrict movement of manpower not connected with hydrogenation plant manufacturing activity in the vulnerable zone.

6 Provide leak detector at the vent of Scrubber Sets used for Cyanation, Bromination processes; Thionyl Chloride and POCL3 handling at plant PP3, 4, and 5. Also provide closed charging arrangement of hazardous chemicals to reactor and leak detector on shop floor.

7 Separate chemicals storage in bulk considering the compatibility and reactivity hazards at tank farms, stores and warehouses. Segregate the laboratory chemicals while storage on storage racks considering functional groups compatibility and reactivity hazards.

8 A cyanide antidote kit should be kept in immediate work area and must be available rapidly available.

9 Extend the fire hydrant network to the proposed installations.

10 Products (25 nos.) are eliminated hence corresponding specific Raw materials for those products will also be eliminated. Ensure safe disposal of such the left over raw materials.

11 Zinc, copper, Manganese oxides, lithium, Zirconium in various compounds forms likely in effluent stream from Organometal products need attention for proper disposal

12 Disaster management plan: To address the residual risk issues a practical working document DMP for site as per the format specified under "The the MSIHC Rules, 1989" is to be updated detailing Emergency organization, roles and responsibilities and dove tailing information for offsite disaster control plan.

4.8 CFD Consequence Analysis Studies of Hydrogen Release Accidents

This report describes consequence analysis using computational fluid dynamics (CFD) technology for worst case release scenarios of accidental hydrogen release and subsequent explosion of the dispersed gas cloud at Innovassynth Technologies India Limited, Khopoli. The report also provides guidance on requirements and locations of

hydrogen gas detectors as mitigation measure to counter the hydrogen fire and explosion risks.

Gexcon India team decided to focus on two major accident scenarios related to hydrogen leakage. These scenarios were then simulated using Gexcon's world leading computational fluid dynamics (CFD) software, FLACS and the results of these two accident scenarios are presented in this report.

For conducting consequence analysis studies using CFD, it is required to represent the relevant sections of the plant facilities in 3-dimensional format. The Gexcon team was also provided with all the required plot plans, building dimensions and the other relevant dimensions.

Analysis and discussion

Three hydrogen leakage scenarios near the hydrogenation plant of ITIL were considered for CFD analysis of consequences. One catastrophic accident case with five possible scenarios was considered and two realistic leakage cases were considered for analysis. Dispersion and subsequent explosion phenomena were simulated using Gexcon's world leading CFD software, FLACS.

For the catastrophic failure scenarios, significant gas clouds can be seen to be forming.
The clouds form in very close vicinity of the leak and are contained well within the boundary of the ITIL. The clouds dilute and rise up quickly away from the leak location and do not seem to be posing any risk to regions away from the leak locations.

Additionally, it is seen that, all the gas clouds are formed with little to no congestion in the region. Hence the overpressures generated from the explosions are not significantly high enough to cause concerns from structural damage to buildings or major equipment, provided these structures are fundamentally strong.
On ignition, these gas clouds, however, may pose risk to personnel working in the vicinity of the hydrogen storage and hydrogenation plant.

In case of catastrophic leakage scenario, the time window for finding ignition source for the gas cloud is very short, of the order of 5-10 seconds. The cloud build up is also very fast. Hence, probability of explosion from catastrophic failure can be considered

quite small. However, realistic leaks may build small but ignitable clouds and eventually find ignition source thus posing threat to personnel working in the surrounding areas.

During the dispersion simulations for all scenarios, various gas concentration monitors were set up. Based on the concentrations recorded at each of these locations and considering that only a limited set of leak directions and rates were simulated.

Observations:

Based on the worst case catastrophic and realistic accident case scenarios analysis performed using 3D CFD simulations of the plant, is was seen that Flammable gas cloud can be formed in event of leakage of hydrogen either from the storage cylinders or from flanges and joints in the piping that supplies hydrogen to the plant.

These clouds are formed in close vicinity of the storage and hydrogenation plant area and the risks of fires and explosions are limited to these locations only. Rest of the ITIL facility as well as outside the plant areas are not exposed to any risks from hydrogen leakage accidents.

Even in case of worst case catastrophic failure of the entire storage inventory, the peak overpressures are not strong enough to cause any major structural damage to the buildings, provided these structures are fundamentally strong.

Personnel in proximity of the hydrogenation building may be at risk in such events.

Recommendations:

As a part of mitigation of risks posed by fire and explosion from accidental leakage of hydrogen, Gexcon India proposes installation of:

1. Three numbers of hydrogen detectors in the storage shade area, two numbers at quad top and one at North side.

2. Two numbers of Hydrogen detectors in the hydrogenation building, one at upper deck and one at lower deck (between both the autoclaves).

3. Minimum (say one) man power is assigned for working in Hydrogenation plant at any point of time.

4. Movement of personnel to be restricted in the area around the hydrogenation plant, inclusive of the area in front of PP 1 as covered in contour.

5. Standard Operating Procedures should be developed by ITIL as response to alarms activated by such hydrogen detectors.

5.0 ENVIRONMENTAL MANAGEMENT PLAN

An environmental management plan has been proposed to implement the mitigation measures. The plan will ensure that the adverse environmental impacts are minimized and the beneficial impacts area maximized.

5.1 DOMESTIC SEWAGE

Domestic wastewater generated will be treated separately in proposed Sewage Treatment plant of capacity 41 CMD. Treated wastewater will be reused.

5.2 INDUSTRIAL EFFLUENT

The total effluent generation will be 297 CMD. Effluent from high TDS stream is treated in existing MEE - I, then condensate of MEE - I and other streams from process will be treated in conventional ETP consisting of primary, two stage secondary and tertiary treatment. This will be further treated by RO-I for permeate recycled and effect zero liquid discharge (ZLD). Also cooling tower and boiler blow down will be fed to RO-II, permeate will be recycled and reject of RO-I and RO-II will be fed to MEE - II.

5.3 AIR POLLUTION MANAGEMENT

The source of emission i.e. Flue Gas Emission is from existing and additional industrial Boiler. The Fuel gas emission is released through stack having adequate stack height.

5.4 SOLID & HAZARDOUS WASTE MANAGEMENT

The Hazardous Wastes generated will be sent for further treatment and disposal to CHWSTDF (Common Hazardous Waste Storage Treatment and Disposal Facility), Mumbai waste management Limited, Taloja.

5.5 GREEN BELT DEVELOPMENT

In and around the Industry of green plantation has already done. The total green belt area is 80808 Sq.m. More than 15000 numbers of trees are already planted in factory premises.

6.0 CORPORATE SOCIAL RESPONSIBILITY

As the company is proposing expansion of its work and production capacity; it has the opportunity to increase its positive impact on the life of the people who live close to the company premises. The company has a well equipped R & D unit and requires skilled and highly educated technical staff. Company tries to recruit competent people from Raigad district.

7.0 PROJECT COST AND EXPENDITURE FOR ENVIRONMENTAL ACTIVITIES

Estimated project cost (Economic viability of the project)

Existing	Proposed	Total
79.41	153.00	232.41

8.0. CONCLUSION

ITIL unit is strictly adhering to pollution and social norms. It can be concluded as per environment impact assessment carried out the proposed project of expansion can be implemented without causing any harm to environment and persons.