Executive Summary

For

Public Hearing

For

Proposed expansion project for manufacturing of Synthetic Organic Chemicals

Total production capacity **16476.0 TPA**

5(f) Category – A

By

HIMALAYA TERPENES PVT. LTD.

M/s. HIMALAYA TERPENES PVT LTD

Plot No. 227, 228 & 231, At Jamghar, Post Nehroli, Tal. Wada, Dist. Palghar, Maharashtra, 421312.

Environmental Consultant:

GOLDFINCH™

One-stop Environmental Solution...

GOLDFINCH ENGINEERING SYSTEMS PRIVATE LIMITED

Thane, Maharashtra

QCI-NABET Accredited EIA Consultancy for Schedule 5 (f)

Certificate No. – NABET/EIA/23-26/RA 0314

Certified by ISO 9001:2015 & ISO 45001:2018

Monitoring Period: December 2024 to February 2025

February 2026

Executive Summary

1.1 Introduction

Himalaya Terpenes Pvt. Ltd. (Himalaya) was incorporated as a private limited company on 19 August 1999. The company is located at Plot Nos. 227, 228, and 231, Village Jamghar, Post Nehroli, Taluka Wada, District Palghar, Maharashtra.

The unit obtained Consent to Establish (CTE) for manufacturing of products by formulation activity only under the name of Himalaya Terpenes Pvt. Ltd. having Ref no. MPCB/18/55/1812000224, issued on 4th December 2018 enclosed as **Annexure-I** and subsequently commenced production based on a valid Consent to Operate (CTO) under document no. Format1.0/RO/UAN No.0000132604/CO/2205000990, issued on 17th May 2022 and valid until 31st May 2026 enclosed as **Annexure-II**.

Himalaya Terpenes Pvt. Ltd. is currently operating with a production capacity of 663 TPM (i.e., 7,956 TPA) through formulation activities, which does not attract Environmental Clearance as per EIA Notification 2006 and its amendments thereof. The company now proposes to manufacture products from key raw materials using synthetic organic chemical processes, with a proposed production capacity of 16,476 TPA. The manufactured products will be used in the flavor, fragrance and aroma, disinfectant, personal care, and industrial chemical sectors.

The proposed expansion project involves the introduction of chemical synthesis processes, thereby classifying the project under the Synthetic Organic Chemicals Industry [Category 5(f)]. Since the project site is located outside a notified industrial area, the proposed activity falls under Category ‘A’ in accordance with the EIA Notification S.O. 1533(E) dated 14 September 2006 and its subsequent amendments. Consequently, the project requires prior Environmental Clearance from the Ministry of Environment, Forest, and Climate Change (MoEF&CC), New Delhi. The implementation schedule of the project is planned for five years commencing from the date of receipt of Environmental Clearance (EC).

As per the OM dated 27 April 2018, a public hearing is applicable to the project. The Pre-Feasibility Report (Form-1) was submitted on 1st August 2025. Subsequently, the project was issued Terms of Reference (ToR) by EAC-1 on 4th August 2025 (Proposal No. IA/MH/IND3/544737/2025). A copy of the ToR is enclosed as Annexure-III.

Further, as per the MoEF&CC Office Memorandum F. No. IA3-22/14/2025-AI.III (E-275538) dated 29 October 2025, a green belt covering at least 25% of the total plot area is required.

The existing manufacturing area will be expanded, the xylene above-ground tank will be replaced with an underground tank and the existing Effluent Treatment Plant (ETP) will be upgraded. The existing facility will be utilized for the production of synthetic organic chemicals by installing additional reactors and machinery.

1.2 Description of the Project

Table 1: Description of the Project

Sr. No.	Parameters	Description
1.	Category as per EIA Notification	5 (f) A
2.	Latitude	19°36'14.44"N
3.	Longitude	73° 6'34.05"E
4.	Existing and Proposed Production Capacity	Existing: 7,956 TPA (by formulation activity) Proposed: 16476 TPA (Synthetic organics chemicals)
5.	Total Plot Area	16300 sq. m.
6.	Green Belt Area	Existing green belt area: 1,665.96 sq. m (10.22%) Proposed green belt area: 2,409.04 sq. m (14.78%) Total green belt area: 4,075 sq. m (25.0% of plot area) Existing trees: 80 nos. Proposed tree plantation: 1,143 nos. Total trees: 1,223 nos. We have considered numbers of trees based on their 80% of the survival rate & 2500 nos./Ha.
7.	Fresh Water Requirement & its Source	Water requirement: 25 CMD (Existing) + 312 CMD (Additional proposed) = Total 337 CMD Recycled water: 101 CMD After recycling total fresh water requirement: 236 CMD Source: Ground water. Permission for groundwater extraction will be obtained from CGWA for the proposed expansion. The existing unit already has valid permission from CGWA.
8.	Effluent Quantity (Trade + Domestic)	Trade Effluent: 6.5 CMD (Existing) + 88.5 CMD (Additional proposed) = Total 95 CMD Domestic: 5.2 CMD (Existing) + 0.8 CMD (Additional proposed) = Total 6 CMD

<table>
<tr><th>Sr. No.</th><th>Parameters</th><th>Description</th></tr>
<tr><td></td><td></td><td>Note: The figure mentioned in the CTO for domestic effluent is incorrect. However, based on the water consumption provided for domestic use, the domestic effluent has been recalculated and considered accordingly.</td></tr>
<tr><td>9.</td><td>Trade Effluent Treatment</td><td>The trade effluent is segregated in High TDS & Low TDS stream from process. High TDS stream from process (12 CMD) will be treated in Primary treatment. This primary treated effluent along with Ro reject (17 CMD) will be fed to MVRE (29 CMD). MVRE condensate (29 CMD) will be reused in utility. The generated salts will be sent to the CHWTSDF for disposal.

The low TDS stream from the process (22.5 CMD), utility blowdowns (59.5 CMD), and washing activities (1 CMD) will be collectively (83 CMD) treated in the primary treatment. The primary treated effluent will be treated in the secondary and tertiary treatment. The tertiary treated effluent will be fed to the RO system. The RO permeate (66 CMD) will be reused in utilities, while the RO reject (17 CMD) again fed MVRE to achieve zero liquid discharge ZLD.</td></tr>
<tr><td>10.</td><td>Domestic Waste water Treatment</td><td>Domestic waste water (6 CMD) will be treated in proposed STP of capacity 8 CMD. Treated waste water will be used for gardening.</td></tr>
<tr><td>11.</td><td>Fuel requirement at full load</td><td>
<table>
<tr><th>Equipment</th><th>Fuel</th><th>Total Fuel Quantity</th><th>Stack height in m</th></tr>
<tr><td>1 no. X 8 TPH Boiler (Additional proposed)</td><td>Imported Coal/Briquette</td><td>23 TPD/30 TPD</td><td rowspan="2">Multicyclone followed by bag filter, wet scrubber, ultra low NOx burner & combine Stack Of Adequate Height for Boiler & Thermopack</td></tr>
<tr><td>1 no. X 40 Lac K Cal/Hr. Thermopack (Additional Proposed)</td><td>Imported Coal/Briquette</td><td>21 TPD/27 TPD</td></tr>
<tr><td>1 no. X DG set 500 KVA (Existing)</td><td>Diesel</td><td>120 Kg/hr i.e 159 Lit/hr</td><td>5 m above nearest building rooftop</td></tr>
<tr><td>2 no. X DG set 750 KVA (Additional proposed)</td><td>HSD</td><td>324 Lit/hr</td><td>6 m above nearest building rooftop</td></tr>
</table>
DG set will be used in case of emergency only.</td></tr>
</table>

<table>
<tr><th>Sr. No.</th><th>Parameters</th><th>Description</th></tr>
<tr><td></td><td></td><td>Existing 20 Lac Kcal/hr Thermopack will replaced by proposed 40 Lac Kcal/Hr Thermopack.</td></tr>
<tr><td>12.</td><td>Scrubber Details</td><td>
<table>
<tr><th>Parameter</th><th>HCl Scrubber</th><th>Acid mist Scrubber</th><th>Fugitive emission Scrubber</th></tr>
<tr><td>No of Scrubbers</td><td>Scrubber No. 1</td><td>Scrubber No. 1</td><td>Scrubber No. 1</td></tr>
<tr><td>Existing/ Proposed</td><td>Proposed</td><td>Proposed</td><td>Proposed</td></tr>
<tr><td>Scrubbing media</td><td>Water</td><td>Water/Alkaline solution</td><td>Activated Carbon</td></tr>
<tr><td>Packing type</td><td>Packed Bed with PP Pall Rings</td><td>Packed Bed with PP Pall Rings</td><td>Packed Bed with PP Pall Rings</td></tr>
<tr><td>Temp</td><td>≤ 50°C</td><td>≤ 50°C</td><td>≤ 50°C</td></tr>
<tr><td>Diameter</td><td>0.8 m</td><td>0.8 m</td><td>0.8 m</td></tr>
<tr><td>MOC</td><td>PP/ FRP</td><td>PP/ FRP</td><td>PP FRP</td></tr>
<tr><td>Shape</td><td>Vertical Cylindrical</td><td>Vertical Cylindrical</td><td>Vertical Cylindrical</td></tr>
<tr><td>Height</td><td>15 m</td><td>15 m</td><td>15 m</td></tr>
<tr><td>Pollutant</td><td>HCl</td><td>Acid mist</td><td>VOC</td></tr>
</table>
</td></tr>
<tr><td>13.</td><td>Power Requirement</td><td>Total Connected load: 1200 kW
Total operational load: 880 kW
Generation of electricity from Solar: 296 kWp
% of saving due to installation of Solar: 33.63 %,
Source: MSEDCL</td></tr>
<tr><td>14.</td><td>Work Force</td><td>Existing manpower: 62 Nos.
Additional proposed manpower: 88 Nos.
Total manpower: 150 Nos.</td></tr>
<tr><td>15.</td><td>Total Capital Cost the project</td><td>Existing: 25.93 Cr.
Additional proposed: 22.07 Cr.
Total capital Cost: 48.0 Cr.</td></tr>
<tr><td>16.</td><td>Corporate Environmental Responsibility (CER)</td><td>CER Cost Rs. 0.22 Cr. (1.0% of the proposed capital cost of the project),
The proposed CER activities will be finalized based on the outcomes of the public hearing, in accordance with the Office Memorandum dated 01 May 2018.
(As per conditions stipulated in O.M issued by MoEF & CC O.M No. 22-65/2017IA.III dated 25th Feb. 2021, CER will be a part of EMP).</td></tr>
</table>

1.3 Specific location details

Table 2: Specific location details (Aerial distances)

Location	Plot No. 227, 228 & 231, Jamghar, Post-Nehroli, Tal-Wada, Dist-Palghar, Maharashtra 410220
Latitude	19°36'14.84"N
Longitude	73° 6'33.72"E
Nearest Water body	Vaitarna River- 1.85 km
Near Town/City	Wada – 6.0 km
Road	Mumbai Agra Highway– 44 km
Rail	Vasind – 35.7 km
Airport	Chattrapati Shivaji International Airport – Mumbai at 61.5 km
Eco-sensitive Area	Tansa wildlife sancture-5.6 km

The project location is depicted in Error! Reference source not found..

Note:

1. The NGT passed an order on **27.02.2019** prohibiting all activities within a **10 km radius** of the Tansa Wildlife Sanctuary.
2. The Maharashtra Pollution Control Board (MPCB) challenged this order, relying on a subsequent order passed by the **High Court of Bombay** on **22.07.2019** in **Writ Petition No. 7636 of 2019**, which **stayed** the operation of the NGT order.
3. The High Court of Bombay had already stayed the NGT's order, reflecting a lack of legal basis for the prohibition.

Google Image

Figure 1-1: Google Image of the project site

Toposheet

The toposheet depicting the 10km radial study area in shown in figure below.

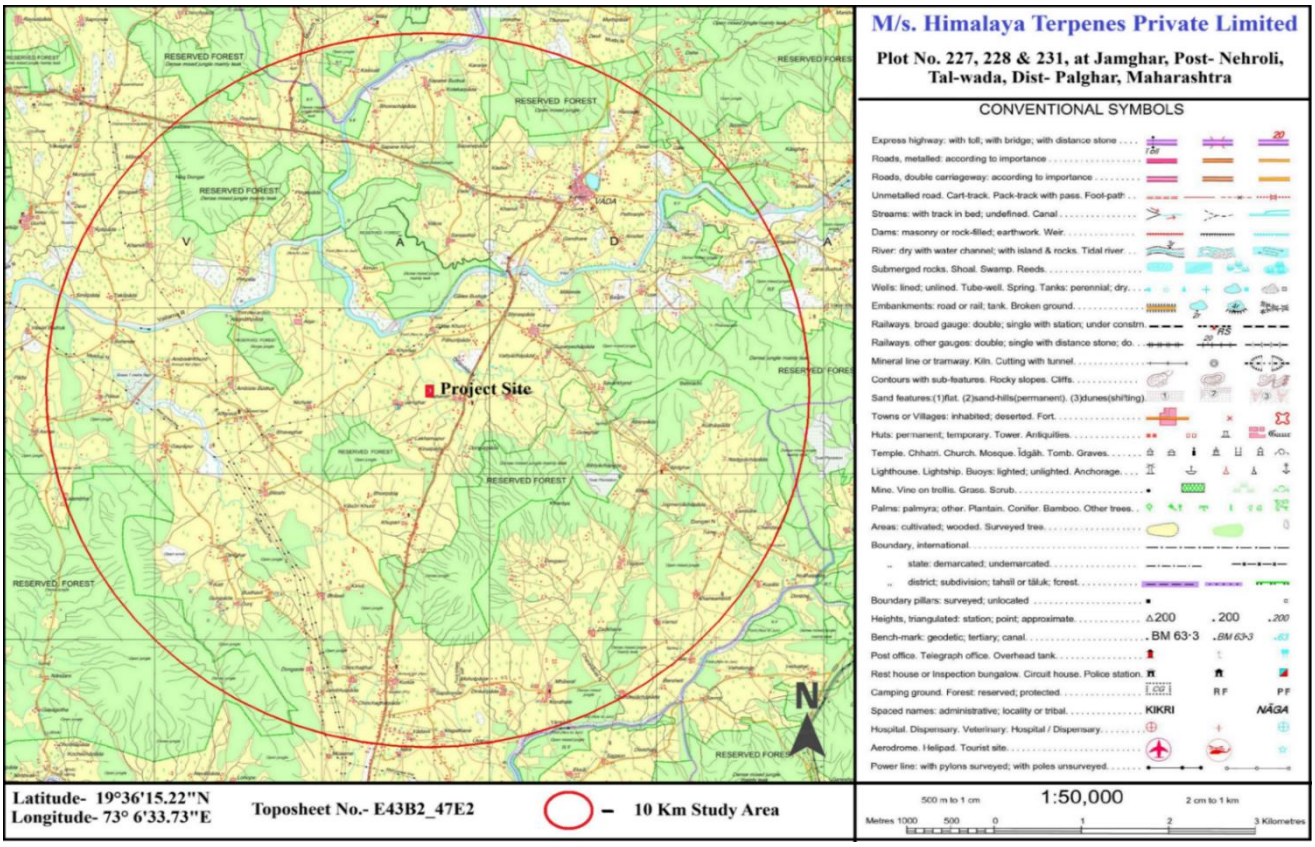


Figure 1-2: Toposheet depicting the 10 km radial study area

1.4 Proposed production details

Table 3: Details of Proposed Production Capacity of product

Sr. No	Product Name	Proposed Qty TPA	Cas No.	End use
1.	Camphor	3000	76-22-2	Medication, Religious rituals
2.	Terpineol Acetate	600	80-26-2	Fragrance and aroma
3.	Terpineol	600	8002-09-3	Flavor, fragrance and Aroma, disinfectant
4.	Terpineol (Cold Process)	600	8002-09-3	Flavor, fragrance and Aroma, disinfectant, personal Care
5.	Distilled Isobornyl Acetate	600	125-12-2	Flavor, Fragrance, Industrial Chemical
6.	Isoborneol	600	124-75-5	Fragrance, personal Care, Industrial Chemical
7.	Dihydromyrcenol	1200	68956-56-9	Perfume, Fragrance, personal Care and Industrial Chemical
8.	Camphene	600	79-92-5	Flavor, Fragrance, Industrial Chemical
9.	Sodium Acetate trihydrated	4128	6131-90-4	Flavor, Food preserving, personal Care, Industrial Chemical
10.	Dipentene	3480	68956-56-9	Paint industry, Polishes, fragrance, Personal Care
11.	Camphor oil	192	8008-51-3	Medication
12.	Pine Tar	480	8011-48-1	Rubber Manufacturing, wood preserving, Sealant
13.	Dihydromyrcene Terpenes	396	68956-56-9	Fragrance, flavor, Personal care, Cleaning agent
	Total	**16476**		

1.5 Layout

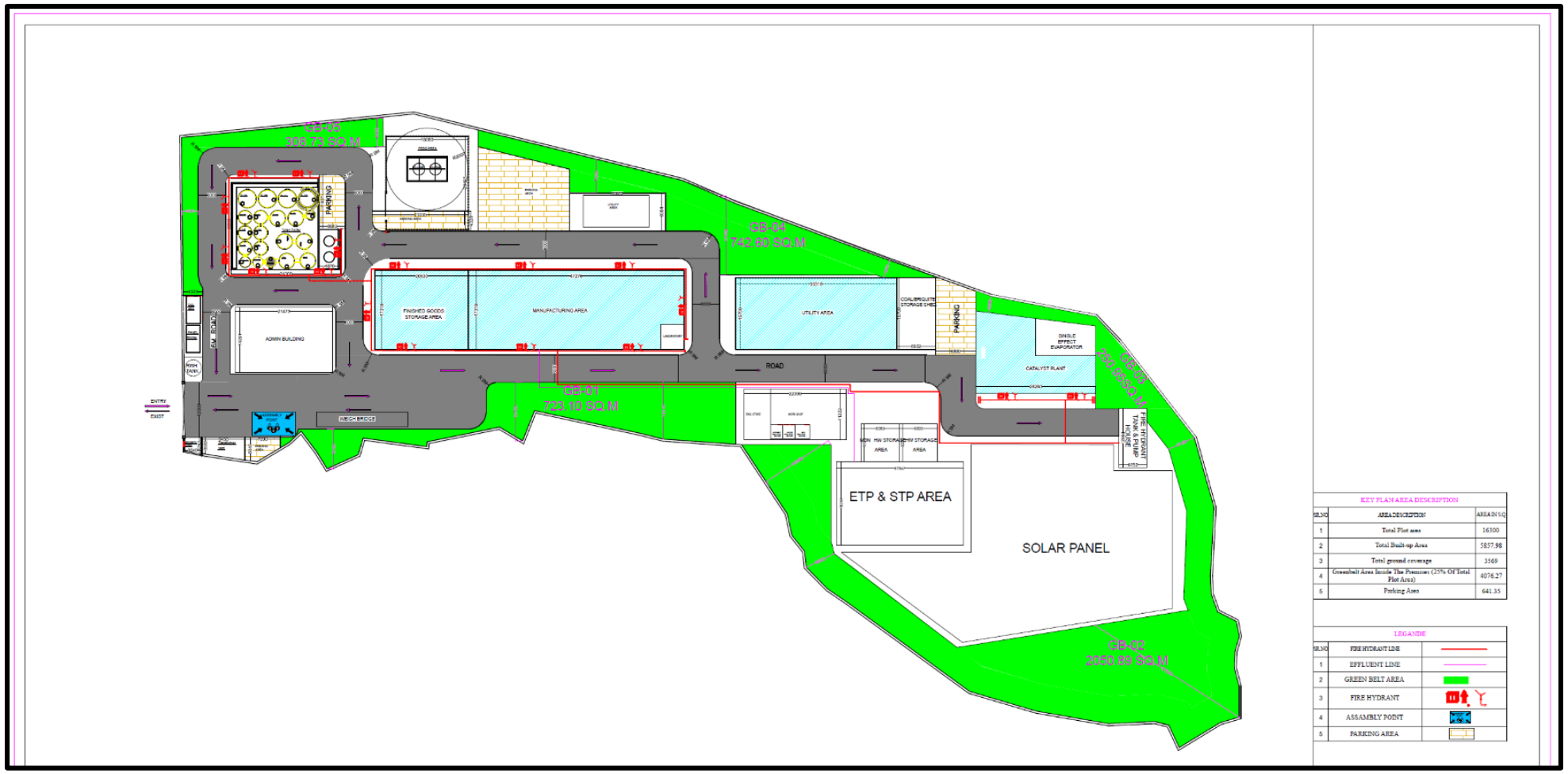


Figure 1-3: Layout of project site

1.6 Area statement

Table 4: Area Break up details of the project site

Sr. No.	Details	Total Area in Sq. m.	Percentage
1.	Total ground coverage	3569	21.90%
	Solar Panel Area	1970	12.08%
2.	Road & Open Area	4346.9	26.67%
3.	Total green belt (Existing-1665.96 Sq.m + Proposed-2409.04 Sq.m)	4075	25%
4.	Parking area	2339.1	14.35%
5.	Total	16300	100%

1.7 Water Requirement and water balance

Table 5:Water balance

The details of water budget and expected effluent generation are detailed in table below**.**

Particular	Water Consumption (CMD)			Loss (-)/gain (+) CMD			Effluent generation (CMD)		
Water Requirement	**Existing**	**Proposed**	**Total**	**Existing**	**Proposed**	**Total**	**Existing**	**Proposed**	**Total**
Process	0.0	47.6	47.6	0.0	-12.9	-12.9	0.0	34.7	34.7
Floor & Drum Washing	0.5	1.4	1.9	-0.3	-0.6	-0.9	0.2	0.8	1.0
Industrial Cooling	18.0	196.0	214.0	-11.7	-168.0	-179.7	6.3	28.0	34.3
Boiler	0.0	48.0	48.0	0.0	-23.0	-23.0	0.0	25.0	25.0
Total (A)	**18.5**	**293.0**	**311.5**	**-12.0**	**-204.5**	**-216.5**	**6.5**	**88.5**	**95.0**
Domestic (B)	6.5	1.0	7.5	-1.3	-0.2	-1.5	5.2	0.8	6.0
Gardening (C)	0.0	18.0	18.0	0.0	-18.0	-18.0	0.0	0.0	0.0
Total (B+C)	**6.5**	**19.0**	**25.5**	**-1.3**	**-18.2**	**-19.5**	**5.2**	**0.8**	**6.0**
Grand Total (A+B+C)	**25.0**	**312**	**337**	**-13.3**	**-222.7**	**-236.0**	**11.7**	**89.3**	**101.0**
Recycle water (RO permeate + MVRE Condensate + STP treated water)			**=(66+29+ 6) 101**			**--**			**--**
Total Fresh water Requirement			**236.0**			**--**			**--**

Note: For online continues monitoring of effluent, web camera with night vision capability and flow meters in the channel/drain carrying effluent within the premises will be installed.

2. Domestic Effluent **6.0 CMD** will be will be treated in proposed STP.

3. MVRE condensate **29.0 CMD** will be reused back to utility.

4. RO permeate **66.0 CMD** will be reused back to utility.

Total recycle water will be 101 CMD, so fresh water requirement will be 236 CMD.

1.8 Baseline Environmental Status (Study period: December 2024 to February 2025)

The annual wind rose from November 2023 to December 2024 reflects that the predominant wind direction is from West South West (WSW). The average wind speed was found to be 3.5 m/sec, while the maximum wind speed was found to be 13.4 m/sec. The calms were found to be 3.1%. Accordingly, the ambient air monitoring locations were finalized considering the wind pattern.

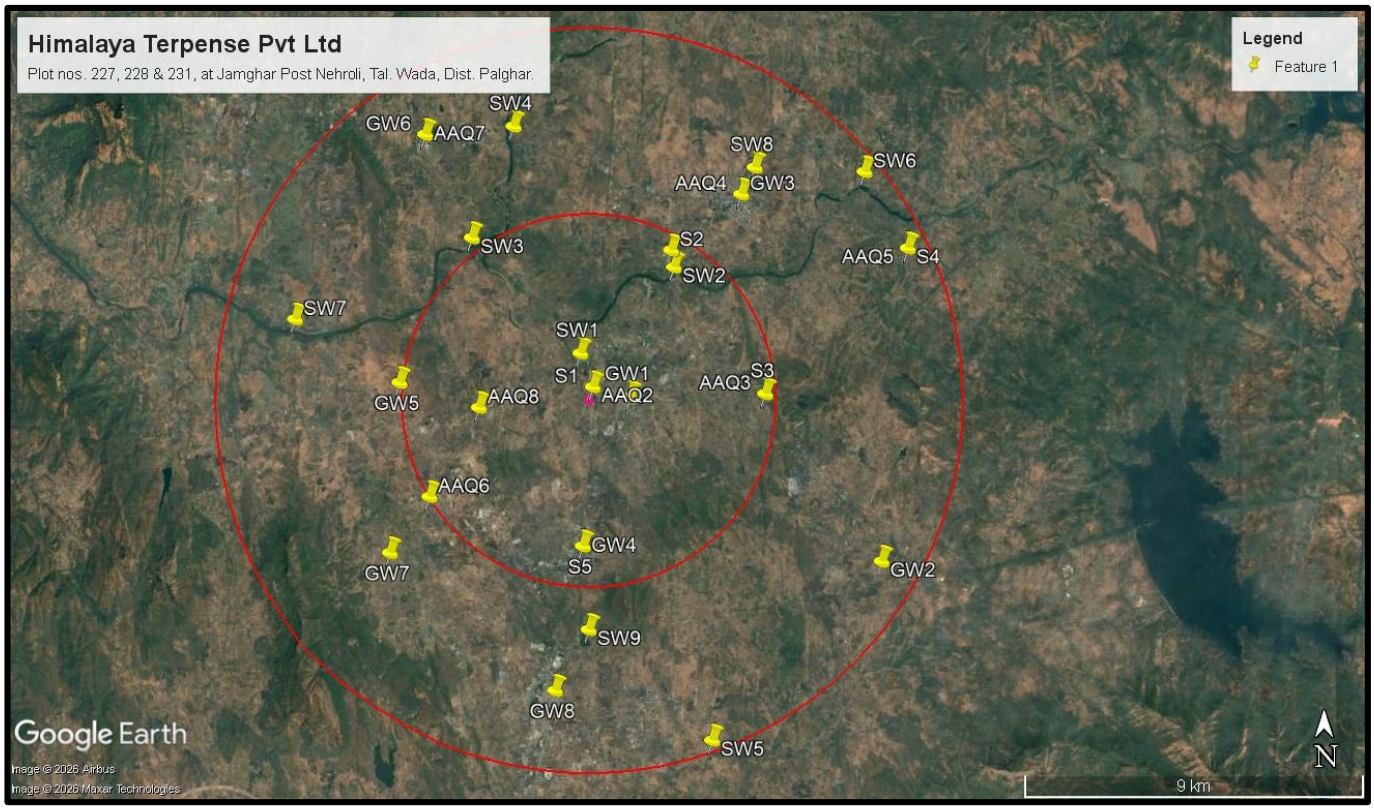
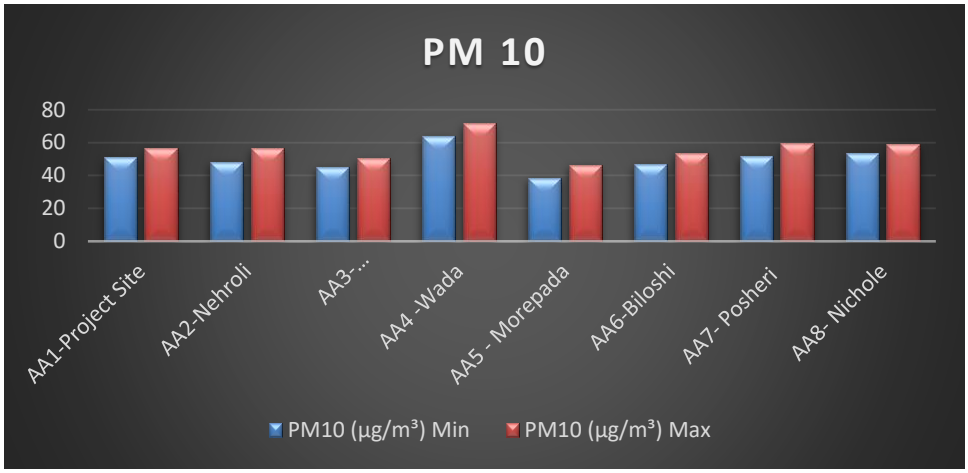


Figure 1-0: Baseline Locations for Air, Surface Water, Ground Water and Soil

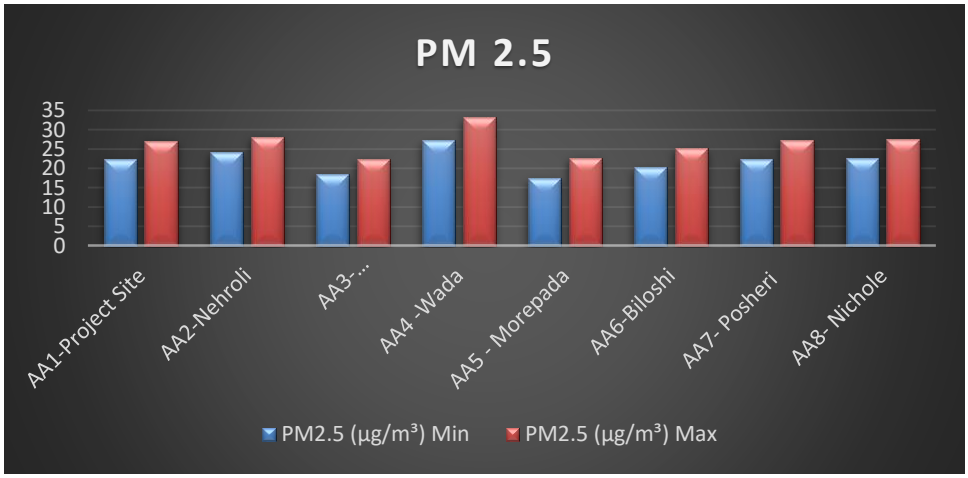
1.1.1 Ambient air quality:

PM_{10}:



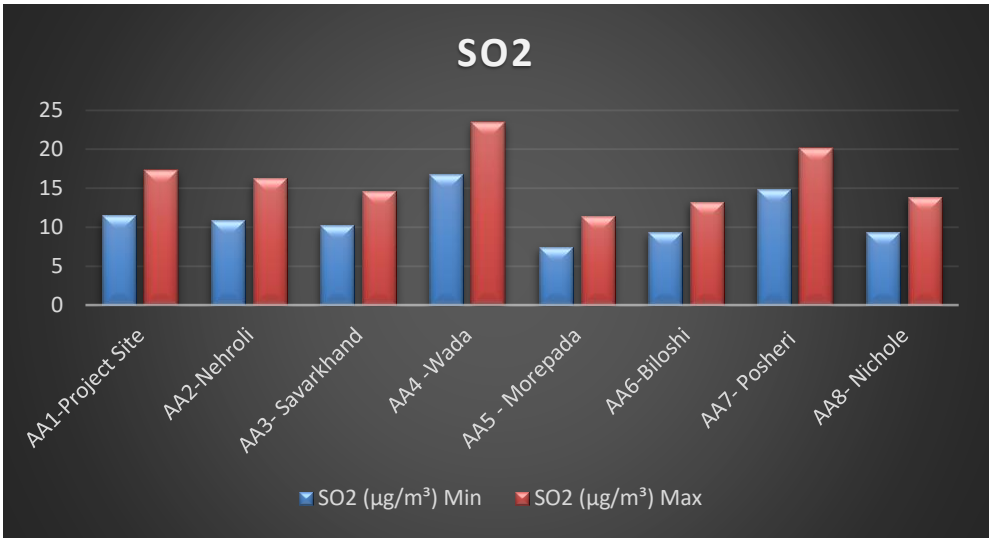
PM_{10} levels were highest at Wada due to combined impacts of industrial emissions, fuel combustion during firing operations, and increased vehicular movement along major transport routes.

$PM_{2.5}$



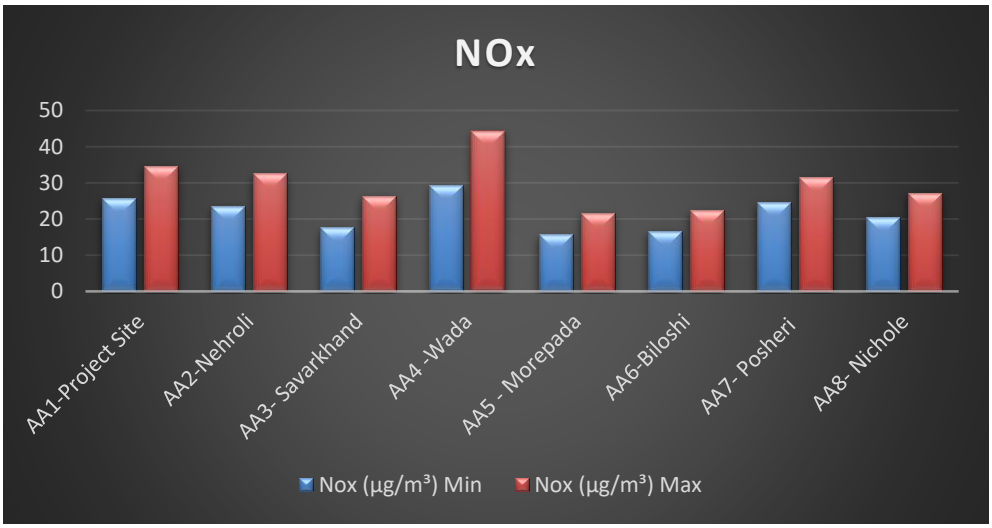
$PM_{2.5}$ levels were highest at Wada due to industrial combustion processes, fossil fuel use, heavy vehicular traffic, and other anthropogenic activities such as construction and fuel burning.

Sulphur dioxide



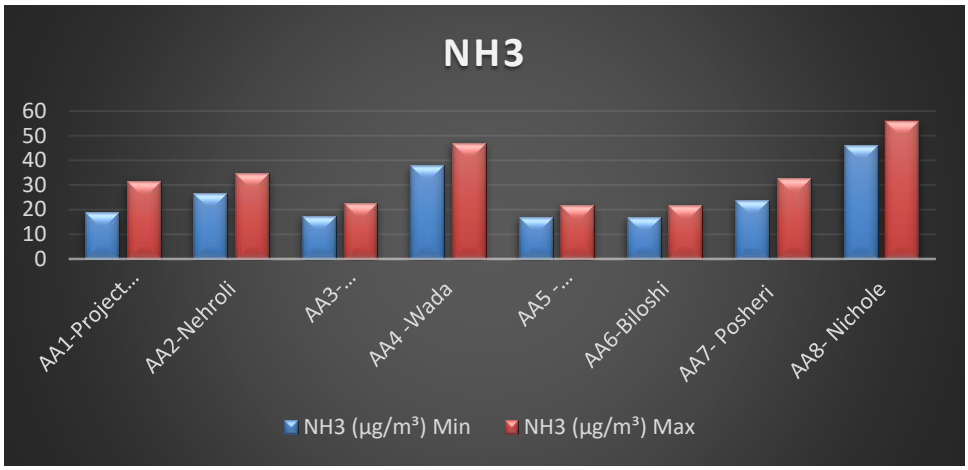
SO_2 levels were highest at Wada due to industrial emissions, sulfur-related industrial processes, and combustion of fossil fuels for industrial, transport, and domestic activities.

Oxides of Nitrogen



NO_x levels were highest at Wada due to heavy vehicular traffic, fossil fuel combustion from transport and industrial activities, additional inputs from agricultural and biomass burning, and limited dispersion under local meteorological conditions.

Ammonia



NH_3 levels were highest at Nichole Village due to intensive agricultural activities, use of nitrogen-based fertilizers, livestock farming, and decomposition of organic matter.

Carbon Monoxide

Carbon monoxide (CO) is a colorless, odorless gas generated mainly from the incomplete combustion of carbon-based fuels. Monitoring results show that CO concentrations were below 1.0 mg/m³ at all locations. Minor contributions may arise from agricultural activities and biomass burning, especially during winter due to reduced combustion efficiency. The location of Wada and its proximity to the industrial area may influence local dispersion and accumulation of CO.

BTX was found to be below Minimum detection limit at project site i.e below 0.2 µg/m³.

1.1.2 Surface water quality:

The standards for the surface water as per CPCB criteria are given in Error! Reference source not found.

Table 6: Surface water quality standards as per CPCB

Designated-Best-Use	Class of water	Criteria
Drinking Water Source without conventional treatment but after disinfection	**A**	• Total Coliforms Organism shall be 50 or less • pH between 6.5 and 8.5 • Dissolved Oxygen 6mg/l or more • Biochemical Oxygen Demand 5 days 20C 2 mg/l or less
Outdoor bathing (Organised)	**B**	• Total Coliforms Organism MPN/100ml shall be 500 or less pH between 6.5 and 8.5 Dissolved Oxygen 5mg/l or more • Biochemical Oxygen Demand 5 days 20C 3 mg/l or less
Drinking water source after conventional treatment and disinfection	**C**	• Total Coliforms Organism MPN/100ml shall be 5000 or less pH between 6 to 9 Dissolved Oxygen 4mg/l or more • Biochemical Oxygen Demand 5 days 20C 3 mg/l or less
Propagation of Wild life and Fisheries	**D**	• pH between 6.5 to 8.5 Dissolved Oxygen 4mg/l or more • Free Ammonia (as N) 1.2 mg/l or less
Irrigation, Industrial Cooling, Controlled Waste disposal	**E**	• pH between 6.0 to 8.5 • Electrical Conductivity at 25C micro mhos/cm Max.2250 • Sodium absorption Ratio Max. 26 • Boron Max. 2 mg/l
	Below-E	Not Meeting A, B, C, D & E Criteria

Note:

Class A: Drinking water without conventional treatment but after disinfection

Class B: Outdoor bathing (Organized)

Class C: Drinking water source after conventional treatment and disinfection

Class D: Propagation of Wild life and Fisheries

Class E: Water for Irrigation, industrial cooling and controlled waste disposal.

Based on the comparison of the parameters of the individual water bodies with the CPCB standards for the water quality the water bodies from SW1 to SW9 can be classified as follow:

Tributary near project site, Vaitarna River Upstream near Wada MIDC, Vaitarna River downstream near Vaitarna Nagar, Pinjaal River Upstream, Tansa River, Vaitarna River Upstream near Gate, Vaitarna River downstream near Boranda, Kudus Lake, Kambare Lake, falls under “E” category.

1.1.3 Ground water quality:

Based on the Ground water analysis it can be concluded that the ground water can be considered fit for domestic purposes. In case the water is intended to be used for drinking a basic primary treatment is advised prior to its use. The water sample after treatment is suggested to be tested and compared with the IS standards so as to ensure the quality.

1.1.4 Soil quality:

The conclusions related to the various attributes when compared with Chemical classification of soil as per ICAR are as under:

- pH: Highest at Khupari (7.3) – indicates neutral soil, suitable for most crops.
- Total Nitrogen: Highest at Khupari (3568.57 mg/kg) – suggests good soil fertility and better plant growth potential.
- Available Phosphorus: Highest value 1.28 mg/kg – still very low, indicating overall phosphorus deficiency in the area.
- Available Potassium: Highest at Morepada (120.08 mg/kg) – comparatively better potash availability than other locations.
- Organic Carbon: Highest at Savarkhand (1.38%) – reflects good soil health and high nutrient-holding capacity.

1.1.5 Ecology and Biodiversity:

The proposed project activity is expansion project in the rural area of Wada taluka, any sort of habitat loss is not involved, the habitat near to project site is majorly Rural. Total 133 floral species and 110 faunal species were recorded in primary data survey, none belongs to the categories of concern as per IUCN assessment and nor is listed as Schedule -I (fauna) as per the WPA. The Simpson and Shannon diversity indices were 0.96 and 3.41 respectively, which indicates that the area is represented by good number of species revealing the heterogeneity

1.9 Mitigation Measures:

The expected pollutants and mitigation during the construction phase is given in table below.

Table 7: Condensed description of Expected pollutants and Mitigation

Construction phase			
Sr. No.	**Environment component**	**Impact**	**Mitigation**
1.	Ambient air	Dust emissions from site preparation, excavation, material handling and other construction activities at site	• Regular water spray will be done. • Dust masks shall be provided. • Regular maintenance of machine
2.	Water	Contamination of water bodies.	• Garland gutter shall be provided. • No discharge of untreated water

Construction phase			
Sr. No.	**Environment component**	**Impact**	**Mitigation**
3.	Land / soil	Wastage of soil Soil contamination	• Top soil shall be preserved. • It shall be used for gardening/leveling
4.	Solid waste	Soil contamination	• Empty paint boxes, drums, sacks, paper bags will be segregated. • Will be resold to recyclers.
5.	Noise	Noise generation from construction equipment	• Working in night shall be avoided. • PPE shall be provided to workers.
6.	Ecology	Destruction of flora and fauna	Construction activity will be done at existing premises. There will be no impact on flora and fauna of region.
7.	Socio-economy	Loss of land Rehabilitation Resettlement	Not applicable as construction will be done at MIDC plot.
8.	Traffic pattern	Increase in road traffic	Care will be taken to control the traffic pattern.

The condensed description of expected pollutants and mitigation during operation phase is given in table below.

Table 8: Condensed description of Expected pollutants and Mitigation during operation phase

Operation phase				
Sr. No.	**Environment component**	**Impact**	**Mitigation**	
1.	Ambient air	PM_{10}, $PM_{2.5}$, SO_2, NOx	1 no. X 8 TPH Boiler (additional proposed)	33 m combine stack for Boiler & Thermopack.
			1 no. X 40 Lac K Cal/Hr (additional proposed).	
			1 No. X 500 KVA DG Set (Existing)	5 m above nearest building rooftop
			2 No. X 750 KVA DG Set (additional proposed)	6 m above nearest building rooftop
2.	Water	Trade Effluent: 95 CMD	The trade effluent is segregated in High TDS (12 CMD) & Low TDS stream from process (83 CMD). High TDS stream from process will be treated in Primary treatment. This primary treated effluent (12 CMD) along with RO reject (17 CMD) will be fed to (29 CMD) MVRE. MVRE condensate (29 CMD) will be reused in utility. The generated salts will be sent to the CHWTSDF for disposal. The low TDS stream from the process, utility blowdowns, and washing activities will be collectively (83 CMD) treated in the primary treatment. The primary treated effluent will be fed to the secondary followed by tertiary treatment. The tertiary treated effluent will be fed to the RO system. The RO permeate (66 CMD) will be reused in utilities, while the RO reject (17 CMD) again fed to MVRE to achieve zero liquid discharge ZLD.	
		Domestic: 6 CMD	Domestic waste water will be treated in proposed STP of capacity 8 CMD.	
3.	Solid waste	Hazardous waste	Will be disposed to CHWTSDF.	

4.	Noise	Noise pollution	No impact as there will be no heavy machinery in Operation. Acoustic enclosure will be provided to the DG sets.
5.	Ecology	Effect on flora and fauna of region	Total green belt area is 4075 Sq.m. (25.0 % of total plot area) will be provided.
6.	Socio-economy	Positive impact	Existing manpower: 62 Nos. Additional proposed manpower: 88 Nos. Total manpower: 150 Nos.
7.	Accidents	Loss, danger to human life	Required safety systems and alarms will be provided. Safety valves will be provided. Fire hydrant system and sprinkler system is already provided. Fire extinguishers is already provided as per factories Act.

1.10 Environmental Monitoring Programme

Table 9: Post Project Environmental Monitoring Locations and frequency

Sr. No.	Environmental Components		Pollutants to be Analyzed	Monitoring Points/ Location	Frequency	Conducted by	Responsibility in Organization
1.	**Ambient Air quality**		Particulate Matter (PM_{10}), Particulate Matter ($PM_{2.5}$), SO_2, NO_2, CO, up to 24 Hrs.	At one location within the plant premises, 3 outside the plant area at an angle 120° each, covering upwind & downwind directions.	Once in every Quarter	NABL/ MoEF approved Laboratory	EHS Team
2.	**Emission from stacks**	**DG & Boiler Stack**	Flue gas temperature, flue gas velocity, volume of flue gases & particulate matter content	At source of emission (Stack from sampling port)	Once in every Quarter	NABL/ MoEF approved Laboratory	EHS Team
3.	**Work Place Monitoring**		Respirable Particulate Matter, SO2, NOx, Toluene, Xylene	At least 2 locations at Manufacturing area	Once in every Quarter	NABL/ MoEF approved Laboratory	EHS Team
4.	**Waste water**	**ETP**	pH, COD, BOD, TDS, TSS, Phenolics, Sulphates, Chlorides	Wastewater at different stages of Effluent treatment Process, input and output effluent.	Daily/ Monthly	Daily by in-house Chemist/ Monthly by NABL/ MoEF approved Laboratory	ETP Operator/ EHS Team
5.	**Noise**		Spot Noise Level Measurement	At compressor house, pump house and outside the Plant boundary.	Quarterly	NABL/ MoEF approved Laboratory	EHS Team
6.	**Solid Waste**	**Hazardous waste**	Records of quantity of generation, handling, storage and transportation (disposal) of	Records of trucks carrying HW	Monthly	by Company EHS team	EHS Team
		Non					

		Hazardous Waste	solid and hazardouswaste				
		E-waste/ Battery Waste/ Biomedical Waste					
7.	**Greenbelt/Vegetation**		Status of Green belt development, plant growth, Survival rate, new species for plantation	Greenbelt area	Half yearly/Yearly	Half yearly by Company EHS team/ Yearly audit by QCI NABET approved Expert	EHS Team
8.	**Soil**		pH (10% aq Solution) , Moisture, Bulk Density, Electrical Conductivity, SAR, Water Holding Capacity, Organic Matter, Total Organic Carbon, Sodium as Na, Potassium as K, Copper as Cu, Iron as Fe, Manganese as Mn, Boron as B, Calcium, Magnesium, Total Nitrogen, Total Phosphorus, Available Phosphorus, Available Potassium, Cation Exchange Capacity, Exchangeable Sodium, Available Micro-Nutrients (DTPA Extractable)- Manganese as Mn, Iron as Fe, Copper as Cu, Zinc as Zn	At least two locations from area near Solid/ hazardous waste storage/ Dumping Area and one at lower contour location	Before and after monsoon	NABL/ MoEF approved Laboratory	EHS Team
9.	**Carbon footprint**		Solar Panels having capacity	--	Yearly	NABL/ MoEF approved	EHS Team

	monitoring	296 kWp is installed to reduce Consumption of electricity which indirectly reduce carbon footprint. Tree plantation will be done to reduce carbon footprint. Efforts will be taken to reduce fuel consumption e.g. use of well efficient insulation to heating equipment, optimization of process etc.			Laboratory	
10.	**Water footprint monitoring**	Rain water harvesting is being done and collected rain water is being used in utilities & domestic purpose which minimizes the water footprint in monsoon season. Treated waste water will be recycled & reused. Regular maintenance of equipment's will be carried out to reduce wastage of water due to leaks.	--	Yearly	NABL/ MoEF approved Laboratory	EHS Team

A comprehensive environmental monitoring programme has been suggested to monitor the efficacy of the implementation of the mitigation measures given in the Environmental Management Plan. The total cost earmarked for the same is Rs. 4.3 Lacs

1.11 Additional Studies Conducted

The following additional studies have been conducted:

- **Risk Assessment**

The provided **risk mitigation measures** necessary for managing the hazards associated with storing and handling three key chemicals: **Acetic acid**, **Acetic anhydride**, and **Toluene**, along with general safety protocols.

Table 10: Risk Mitigation Measures

Category	Key Safety Measures To Avoid Emergencies	Key Mitigation Measures For Leakage
Acetic acid	Isolate the leak source if safe to do so using emergency shut-off valves. Keep fire extinguishers (CO_2, dry chemical, or alcohol-resistant foam) ready.	Keep away from oxidizers, strong bases, reducing agents, and reactive chemicals. Keep acid-neutralizing agents and spill kits nearby.
Acetic anhydride	Store in a cool, well-ventilated area away from moisture and incompatible chemicals. Follow proper procedures for transfer and mixing.	Dispose of contaminated materials as per hazardous waste guidelines. Contain and absorb leaks using inert materials (sand/vermiculite).
Toluene	Store away from heat, sparks, and open flames; use explosion-proof equipment. Ground and bond containers during transfer to prevent static discharge.	Provide ventilation to disperse vapors. Use PPE and respiratory protection during cleanup.

- **Life Cycle Analysis**

The total CO_2 footprint from the proposed production of Himalaya amounts 1.326 kg equivalent per Kg of the total production. The CO_2 footprint will be reduced to 1.273 kg CO_2 equivalent per Kg of the total production, i.e. it will be reduced by **4.03 %** with the use of Variable Frequency Drives, by tree plantation & use of additional renewables. Himalaya further commits to implement all the above said mitigation measures to reduce the carbon footprint.

1.12 Budget Allocation for EMP

Table 11: Budget Allocation for EMP during Operation Phase

<table>
<tr><th>Activity</th><th>Aspects</th><th>Mitigation Measures</th><th>Capital cost (In Rs. Lacs)</th><th>Recurring cost (Rs. Lacs/yr.)</th><th>Timeframe</th><th>Responsibility</th></tr>
<tr>
<td>Operation of
1 No. X 8 TPH Boiler (proposed)
Fuel: Imported Coal/ Briquette
Quantity:23 TPD/30 TPD
1 No. X 40 LacKcal/hr Thermopack (Proposed)
Fuel: Imported Coal/ Briquette
Quantity:21 TPD/27 TPD
Existing 20 Lac Kcal/hr Thermopack will replaced by proposed 40 Lac Kcal/Hr Thermopack.</td>
<td>Air pollution
(NOx)</td>
<td>

Existing stacks of 33 m height,
Multicyclone followed by bag filter
Ultra low NOx burners
Acoustic encl./ Anti vibration pads for all noise making equipment
Scrubber will be provided for fugitive emission.
Regular monitoring w.r.t. EMS, ambient air quality, work area as per the monitoring program
Online monitoring will be provided.

Heating equipment’s and DG set
<table>
<tr><td rowspan="2">Particular</td><td>Boiler</td><td>Thermopack</td><td colspan="2">D.G Stack (KVA)</td></tr>
<tr><td>Proposed</td><td>Proposed</td><td>Existing</td><td>Proposed</td></tr>
<tr><td>Capacity</td><td>1 no. X 8 TPH</td><td>1 no. X 40 Lac K Cal/Hr.</td><td>1 no. x 500 KVA</td><td>2 no. x 750 KVA</td></tr>
<tr><td>Fuel type</td><td>Imported coal/Briquette</td><td>Imported coal/Briquette</td><td>Diesel</td><td>HSD</td></tr>
<tr><td>Fuel quantity</td><td>23 TPD/30 TPD</td><td>21 TPD/27 TPD</td><td>120 kg/hr i.e 159 Lit/hr</td><td>324 Lit/hr</td></tr>
<tr><td>Stack Height (m)- above ground</td><td colspan="2">33 m combine stack for Boiler & Thermopack</td><td>5 m above nearest building rooftop</td><td>6 m above nearest building rooftop</td></tr>
</table>
</td>
<td>18.5(Existing 10.5 lac + Additional 8 lac)
For D.G set Acoustic encl./ Anti vibration pads include in machinery cost</td>
<td>6.0 (Existing 3 lac + Additional 3 lac)</td>
<td>During Commissioning and operation phase</td>
<td>EHS Team/ Shift In-Charge</td>
</tr>
</table>

<table>
<tr><th>Activity</th><th>Aspects</th><th>Mitigation Measures</th><th>Capital cost (In Rs. Lacs)</th><th>Recurring cost (Rs. Lacs/yr.)</th><th>Timefra me</th><th>Responsibil ity</th></tr>
<tr><td>Operation of DG set (1 no. X DG set 500 KVA) (Existing)
(2 no. X DG set 750 KVA) (Proposed)
Fuel: Diesel/HSD
Quantity: 120 kg/hr i.e 159 Lit/hr / 324 Lit/hr
Fugutive Emission:</td><td>HCl, Acid mist & VOC</td><td>
<table>
<tr><td>Air Pollution Control System</td><td>Multi-cyclone followed by bag filter, wet scrubber, ultra-low NOx burner & combine Stack Of Adequate Height for Boiler & Thermopack</td><td>Stack and Acoustic enclosure</td><td>Stack and Acoustic enclosure</td></tr>
<tr><td>Pollutant</td><td>PM10, PM2.5, SO2, NOx</td><td colspan="2">NOx, SO2</td></tr>
</table>
Scrubber details
<table>
<tr><th>Parameter</th><th>HCl Scrubber</th><th>Acid mist Scrubber</th><th>Fugitive emission Scrubber</th></tr>
<tr><td>No of Scrubbers</td><td>Scrubber No. 1</td><td>Scrubber No. 1</td><td>Scrubber No. 1</td></tr>
<tr><td>Existing/ Proposed</td><td>Proposed</td><td>Proposed</td><td>Proposed</td></tr>
<tr><td>Scrubbing media</td><td>Water</td><td>Water/Alkaline solution</td><td>Activated Carbon</td></tr>
<tr><td>Packing type</td><td>Packed Bed with PP Pall Rings</td><td>Packed Bed with PP Pall Rings</td><td>Packed Bed with PP Pall Rings</td></tr>
<tr><td>Temp</td><td>≤ 50°C</td><td>≤ 50°C</td><td>≤ 50°C</td></tr>
<tr><td>Diameter</td><td>0.8 m</td><td>0.8 m</td><td>0.8 m</td></tr>
<tr><td>MOC</td><td>PP/ FRP</td><td>PP/ FRP</td><td>PP FRP</td></tr>
<tr><td>Shape</td><td>Vertical Cylindrical</td><td>Vertical Cylindrical</td><td>Vertical Cylindrical</td></tr>
<tr><td>Height</td><td>15 m</td><td>15 m</td><td>15 m</td></tr>
<tr><td>Pollutant</td><td>HCl</td><td>Acid mist</td><td>VOC</td></tr>
</table>
</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Operation of ETP of capacity 100 CMD</td><td>Water Pollution

Segregation of</td><td>• The trade effluent is segregated in High TDS & Low TDS stream from process. High TDS stream from process will be treated in Primary treatment. This primary treated effluent along with Ro reject will be fed to MVRE. MVRE condensate will be reused in utility. The generated salts will be sent to the CHWTSDF for disposal.</td><td>540.0 (Existing 55 lac + Additional</td><td>180.0 (Existing 30 lac + Additional</td><td>During Commiss ioning and</td><td>EHS Team/ Shift In-
Charge</td></tr>
</table>

<table>
<tr><th>Activity</th><th>Aspects</th><th>Mitigation Measures</th><th>Capital cost (In Rs. Lacs)</th><th>Recurring cost (Rs. Lacs/yr.)</th><th>Timefra me</th><th>Responsibil ity</th></tr>
<tr><td>Operation of STP of capacity 8 CMD</td><td>streams as HTDS Flow: 12 CMD from process

&

LTDS Flow: 83 CMD from process Utilities & Washing Activities

&

6.0 CMD domestic wastewater

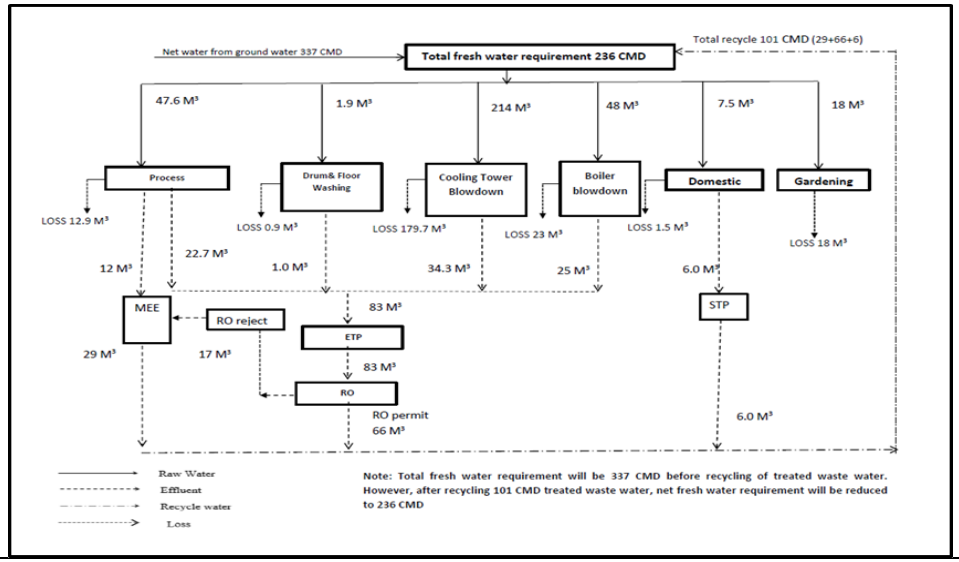
• Accidental release of wastewater/ ETP not</td><td>• The low TDS stream from the process, utility blowdowns, and washing activities will be collectively treated in the primary treatment. The primary treated effluent will be treated in the secondary and tertiary treatment. The tertiary treated effluent will be fed to the RO system. The RO permeate will be reused in utilities, while the RO reject again fed MVRE to achieve zero liquid discharge ZLD.
• For online continuous monitoring of effluent, the unit will install web camera with night vision capability and flow meters in the channel/drain carrying effluent within the premises being a ZLD unit.
• Regular monitoring of wastewater and performance of ETP system.
• Separate STP will be provided for domestic sewage treatment.
• Storm water channels and Effluent channels will be kept separate; it will not mix. Storm water drains will be kept clean and closed
• Water requirement
<table>
<tr><th colspan="2">Particular</th><th colspan="3">Water Consumption (CMD)</th></tr>
<tr><th>Water Requirement</th><th>Existing</th><th>Proposed</th><th>Total</th></tr>
<tr><td>Process</td><td>0.0</td><td>47.6</td><td>47.6</td></tr>
<tr><td>Floor & Drum Washing</td><td>0.5</td><td>1.4</td><td>1.9</td></tr>
<tr><td>Industrial Cooling</td><td>18.0</td><td>196.0</td><td>214.0</td></tr>
<tr><td>Boiler</td><td>0.0</td><td>48.0</td><td>48.0</td></tr>
<tr><td>Total (A)</td><td>18.5</td><td>293.0</td><td>311.5</td></tr>
<tr><td>Domestic (B)</td><td>6.5</td><td>1.0</td><td>7.5</td></tr>
<tr><td>Gardening (C)</td><td>0.0</td><td>18.0</td><td>18.0</td></tr>
<tr><td>Total (B+C)</td><td>6.5</td><td>19.0</td><td>25.5</td></tr>
<tr><td>Grand Total (A+B+C)</td><td>25.0</td><td>312</td><td>337</td></tr>
<tr><td>Recycle water (RO permeate + MVRE Condensate + STP treated water)</td><td></td><td></td><td>=(66+29+6) 101</td></tr>
<tr><td>Total Fresh water Requirement</td><td></td><td></td><td>236.0</td></tr>
</table></td><td>485 lac)</td><td>150 lac)</td><td>operation phase</td><td></td></tr>
</table>

<table>
<tr><th>Activity</th><th>Aspects</th><th>Mitigation Measures</th><th>Capital cost (In Rs. Lacs)</th><th>Recurring cost (Rs. Lacs/yr.)</th><th>Timefra me</th><th>Responsibil ity</th></tr>
<tr><td></td><td>functioning properly</td><td>

- **Effluent generation, treatment and disposal**

<table>
<tr><th colspan="2">Particulars</th><th colspan="3">Effluent generation (CMD)</th></tr>
<tr><th colspan="2">Water Requirement</th><th>Existing</th><th>Proposed</th><th>Total</th></tr>
<tr><td colspan="2">Industrial processing & Scrubber</td><td>0.0</td><td>34.7</td><td>34.7</td></tr>
<tr><td colspan="2">Floor, Reactor, vessel & drum washing</td><td>0.2</td><td>0.8</td><td>1.0</td></tr>
<tr><td colspan="2">Industrial Cooling</td><td>6.3</td><td>28.0</td><td>34.3</td></tr>
<tr><td colspan="2">Boiler makeup</td><td>0.0</td><td>25.0</td><td>25.0</td></tr>
<tr><td colspan="2">Total trade effluent (A)</td><td>6.5</td><td>88.5</td><td>95.0</td></tr>
<tr><td colspan="2">Domestic</td><td>5.2</td><td>0.8</td><td>6.0</td></tr>
<tr><td colspan="2">Gardening</td><td>0.0</td><td>0.0</td><td>0.0</td></tr>
<tr><td colspan="2">Total Domestic (B)</td><td>5.2</td><td>0.8</td><td>6.0</td></tr>
<tr><td colspan="2">Grand Total (A+B)</td><td>11.7</td><td>89.3</td><td>101.0</td></tr>
</table>

- **Water balance diagram**



</td><td></td><td></td><td></td><td></td></tr>
</table>

<table>
<tr><th>Activity</th><th>Aspects</th><th>Mitigation Measures</th><th>Capital cost (In Rs. Lacs)</th><th>Recurring cost (Rs. Lacs/yr.)</th><th>Timeframe</th><th>Responsibility</th></tr>
<tr><td></td><td></td><td>During the monsoon season, rain water harvesting will decrease the total fresh water requirement by 236 CMD.
Domestic Effluent of 8.0 CMD will be treated sewage treatment plant.</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Occupational health</td><td>• Total no. of employees: 150 nos.
• Control of Hazardous Exposures
• Prevention of Workplace Injuries</td><td>• Regular health check-ups and monitoring for early detection of occupational diseases
• Providing personal protective equipment (PPE) and enforcing safety protocols
• Workers should be trained on handling hazardous materials, emergency procedures, and the use of safety equipment.
• Investing in automation to minimize human exposure to hazardous tasks
• First aid facilities consumables & In-house first aid room.</td><td>3.0 (Existing 1 lac+Additional 2 lac)</td><td>5.0 (Existing 4 lac+Additional 1 lac)</td><td>During operation phase</td><td>HR/Admin/ EHS Team</td></tr>
<tr><td>• Green belt
• Area of green belt: 4075 m^2, No. of trees: 1223</td><td>• Potholes digging, Saplings, labor cost, Fertilizers, Drip irrigation facility & maintenance</td><td>• Total Green Belt area will be 4075 Sq.m, No. of trees 1223
• Tree saplings of 6 feet will be transplanted in pits of dimensions 90X90X90 cm
• Regular Maintenance of green belt
• Drip irrigation system for greenbelt development for effective water conservation
• Pollution resistant/tolerant and native species will be selected for greenbelt development as per CPCB guidelines
List of Trees proposed for Green Belt Development
<table>
<tr><th>Sr.No.</th><th>Scientific Name</th><th>Common Name</th><th>Nos.</th></tr>
<tr><td>1.</td><td>Adina cordifolia</td><td>Haldu</td><td>40</td></tr>
<tr><td>2.</td><td>Aegle marmelos</td><td>Bel</td><td>40</td></tr>
<tr><td>3.</td><td>Azadirachta indica</td><td>Neem</td><td>80</td></tr>
<tr><td>4.</td><td>Bauhinia variegata</td><td>Kachanar</td><td>40</td></tr>
<tr><td>5.</td><td>Buchanania cochinchinensis</td><td>Char</td><td>40</td></tr>
<tr><td>6.</td><td>Butea monosperma</td><td>Palas</td><td>40</td></tr>
<tr><td>7.</td><td>Caryota urens</td><td>Shankarjata</td><td>40</td></tr>
</table></td><td>6.1 (Existing 0.4 lac+Additional 5.7 lac)</td><td>3.66 (Existing 0.24 lac+Additional 3.42 lac)</td><td>From Construction Phase</td><td>HR/ EHS Team</td></tr>
</table>

<table>
<tr><th>Activity</th><th>Aspects</th><th>Mitigation Measures</th><th>Capital cost (In Rs. Lacs)</th><th>Recurring cost (Rs. Lacs/yr.)</th><th>Timeframe</th><th>Responsibility</th></tr>
<tr><td></td><td></td><td>
<table>
<tr><td>8.</td><td>Cassia fistula</td><td>Garmal</td><td>60</td></tr>
<tr><td>9.</td><td>Cordia dichotoma</td><td>Bhokar</td><td>40</td></tr>
<tr><td>10.</td><td>Dalbergia sisoo</td><td>Sisam</td><td>40</td></tr>
<tr><td>11.</td><td>Ficus benghalensis</td><td>Banyan</td><td>20</td></tr>
<tr><td>12.</td><td>Ficus religiosa</td><td>Pipal</td><td>20</td></tr>
<tr><td>13.</td><td>Ficus hispida</td><td>Katumbar</td><td>40</td></tr>
<tr><td>14.</td><td>Flacourtia indica</td><td>Kakai</td><td>50</td></tr>
<tr><td>15.</td><td>Heterophragma roxburghii</td><td>Waras</td><td>40</td></tr>
<tr><td>16.</td><td>Holoptelia integrifolia</td><td>Wavli</td><td>40</td></tr>
<tr><td>17.</td><td>Lagerstroemia speciosa</td><td>Taman</td><td>40</td></tr>
<tr><td>18.</td><td>Madhuca latifolia</td><td>Moha</td><td>40</td></tr>
<tr><td>19.</td><td>Miliusa tomentosa</td><td>Hum</td><td>40</td></tr>
<tr><td>20.</td><td>Pongamia pinnata</td><td>Karanj</td><td>80</td></tr>
<tr><td>21.</td><td>Schleichera oleosa</td><td>Kusum</td><td>40</td></tr>
<tr><td>22.</td><td>Semecarpus anacardium</td><td>Biba</td><td>40</td></tr>
<tr><td>23.</td><td>Sterculia urens</td><td>Kullu</td><td>40</td></tr>
<tr><td>24.</td><td>Tectona grandis</td><td>Teak</td><td>133</td></tr>
<tr><td>25.</td><td>Terminalia bellirica</td><td>Behda</td><td>60</td></tr>
<tr><td>26.</td><td>Terminalia tomentosa</td><td>Ain</td><td>40</td></tr>
<tr><td></td><td></td><td>Total</td><td>1223</td></tr>
</table>
</td><td></td><td></td><td></td></tr>
<tr><td>Hazardous & Non-Hazardous Waste</td><td>• Waste generated due to construction activity</td><td>• Segregation & storage of Hazardous waste will be done
• Regular disposal of Hazardous waste to CHWTSDF site
• Hazardous waste will be stored at dedicated storage location with impervious flooring, any leachate or leakage will be lead to ETP.
• Provision of Organic Waste composter provided.</td><td>6.0 (Existing 5 lac + Additional 1 lac)</td><td>39.0 (Existing 4 lac + Additional 35 lac)</td><td>During Construction and Operation phase</td><td>EHS Team</td></tr>
</table>

<table>
<tr><th>Activity</th><th>Aspects</th><th>Mitigation Measures</th><th>Capital cost (In Rs. Lacs)</th><th>Recurring cost (Rs. Lacs/yr.)</th><th>Timefra me</th><th>Responsibil ity</th></tr>
<tr><td></td><td>• Manufacturing activities</td><td>
Hazardous Waste (Area 70.44 sq.m)
<table>
<tr><th rowspan="2">Sr. No.</th><th rowspan="2">Cat. No</th><th rowspan="2">Type of Waste</th><th>Quantity (TPA)</th><th>Quantity (TPA)</th><th>Quantity (TPA)</th><th rowspan="2">Disposal method</th></tr>
<tr><th>Existing</th><th>Propose d</th><th>Total</th></tr>
<tr><td>1</td><td>28.2</td><td>Spent Catalyst</td><td>0</td><td>49</td><td>49</td><td>For regeneration or Sale to MPCB authorized party</td></tr>
<tr><td>2</td><td>28.3</td><td>Spent Carbon (From process)</td><td>0</td><td>12</td><td>12</td><td>CHWTSDF (For Incineration)</td></tr>
<tr><td>3</td><td>5.1</td><td>Used or spent oil</td><td>0</td><td>2.0</td><td>2.0</td><td>Sale to MPCB authorized party</td></tr>
<tr><td>4</td><td>33.1</td><td>Empty barrels/containers / liners contaminated with hazardous chemicals/wastes</td><td>0</td><td>17</td><td>17</td><td>Sale to MPCB authorized party</td></tr>
<tr><td>5</td><td>33.2</td><td>Contaminated cotton rags or other cleaning Material</td><td>0</td><td>0.5</td><td>0.5</td><td>CHWTSDF (for Incineration)</td></tr>
<tr><td>6</td><td>35.2</td><td>Spent ion exchange resin</td><td>1</td><td>0</td><td>1</td><td>CHWTSDF (for incineration)</td></tr>
<tr><td>7</td><td>35.3</td><td>Chemical Sludge from waste water treatment</td><td>1</td><td>89</td><td>90</td><td>CHWTSDF (For Landfill)</td></tr>
<tr><td>8</td><td>28.3</td><td>Spent carbon (From ETP)</td><td>0</td><td>5</td><td>5</td><td>CHWTSDF (For Incineration)</td></tr>
<tr><td>9</td><td>37.3</td><td>Salts from evaporator</td><td>0</td><td>250</td><td>250</td><td>CHWTSDF (For Landfill)</td></tr>
</table>
</td><td></td><td></td><td></td><td></td></tr>
</table>

<table>
<tr><th>Activity</th><th>Aspects</th><th>Mitigation Measures</th><th>Capital cost (In Rs. Lacs)</th><th>Recurring cost (Rs. Lacs/yr.)</th><th>Timefra me</th><th>Responsibil ity</th></tr>
<tr><td></td><td></td><td>

CHWTSDF certificate is attached as Annexure-IV

Other waste

Sr. No.	Description	Unit	Total Quantity	Disposal method
1	E-Waste	TPA	2.4	Sale to authorized dismantlers/ Recyclers
2	Battery waste	TPA	1	Returned to battery manufacturer through authorized dealer on buy back procurement
3	Plastic Waste	TPA	5	After segregation, sale to authorized recycler/re-processor as per Plastic waste (amendment) rules 2021
4	Bio medical Waste	TPA	0.02	Bio-medical waste handed over to the visiting medical checkup team for appropriate disposal

Non- Hazardous Wastes (Area 33.45 sq.m)

Sr. No.	Description	Unit	Total Quantity	Disposal method
1	Packing material & paper waste	TPA	3	Sale to authorized party
2	Paper Cartoon Box	TPA	3	Sale to authorized party

</td><td></td><td></td><td></td></tr>
</table>

<table>
<tr><th>Activity</th><th>Aspects</th><th>Mitigation Measures</th><th>Capital cost (In Rs. Lacs)</th><th>Recurring cost (Rs. Lacs/yr.)</th><th>Timeframe</th><th>Responsibility</th></tr>
<tr><td></td><td></td><td>
<table>
<tr><td>3</td><td>Wooden Pallets</td><td>TPA</td><td>4</td><td>Sale to authorized party</td></tr>
<tr><td>4</td><td>Metal Scrap</td><td>TPA</td><td>2</td><td>Sale to authorized party</td></tr>
<tr><td>5</td><td>MS Drums</td><td>TPA</td><td>4.5</td><td>Sale to authorized party</td></tr>
<tr><td>6</td><td>Coal Ash OR</td><td>TPA</td><td>2032</td><td>Sale to Brick Manufacturer</td></tr>
<tr><td>7</td><td>Briquette Ash</td><td>TPA</td><td>847</td><td>Sale to Brick Manufacturer</td></tr>
<tr><td>8</td><td>Waste Corrugated box/Wooden box</td><td>TPA</td><td>3</td><td>Sale to authorized party</td></tr>
<tr><td>9</td><td>Municipal Solid Waste (Wet Waste)</td><td>TPA</td><td>2</td><td>Segregation, Collection, Storage and treatment in in-house Organic Waste Converter (OWC)& used as bio manure in Gardening area within premises.</td></tr>
<tr><td>10</td><td>Municipal Solid Waste (Dry Waste like metal scrap, plastic, glass, wood)</td><td>TPA</td><td>1.2</td><td>Collection, Storage & Segregation of waste and sale to respective recycler</td></tr>
<tr><td>11</td><td>STP Sludge</td><td>TPA</td><td>1</td><td>converted into compost and will be utilized as a manure for greenbelt</td></tr>
</table>
</td><td></td><td></td><td></td></tr>
<tr><td>Environmental monitoring and Management</td><td>• Air Emissions (Quarterly monitoring- PM_{10}, $PM_{2.5}$, SO_2, NOx, NH_3, CO)</td><td>Regular monitoring of Ambient Environmental Conditions by (NABL approved laboratory) & maintenance of Pollution Control Equipment
<table>
<tr><th>Sr. No.</th><th>Environmental Components</th><th>Pollutants to be Analyzed</th><th>Monitoring Points/ Location</th><th>Frequency</th></tr>
<tr><td>1.</td><td>Ambient Air</td><td>Particulate Matter</td><td>At one location</td><td>Once in</td></tr>
</table>
</td><td>--</td><td>4.02(Existing 0+Additional 4.02 lac)</td><td>During Operation phase</td><td>EHS Team</td></tr>
</table>

Activity	Aspects	Mitigation Measures						Capital cost (In Rs. Lacs)	Recurring cost (Rs. Lacs/yr.)	Timeframe	Responsibility
	• Noise Level (Quarterly monitoring- Spot Noise Level Measurement at Five different locations at Day & Night Time) • Waste water-ETP (Monthly monitoring- pH, COD, BOD, TDS, TSS) • Soil (Half yearly monitoring- pH (10% aq Solution), Moisture, Bulk Density, Electrical Conductivity, SAR, Water Holding Capacity, Organic Matter, Total Organic Carbon, Sodium as Na, Potassium as K)		**quality**		(PM_{10}), Particulate Matter ($PM_{2.5}$), SO_2, NO_2, CO, up to 24 Hrs.	within the plant premises, 3 outside the plant area at an angle 120° each, covering upwind & downwind directions.	every Quarter				
		2.	**Emission from stacks**	**Process Stacks** **DG & Boiler Stack**	Flue gas temperature, flue gas velocity, volume of flue gases & particulate matter content	At source of emission (Stack from sampling port)	Once in every Quarter				
		3.	**Work Place Monitoring**		Respirable Particulate Matter, SO_2, NOx, Toluene, Xylene,	At least 2 locations at Manufacturing area	Once in every Quarter				
		4.	**Waste water**	**ETP**	pH, COD,BOD, TDS, TSS, Phenolics, Sulphates, Chlorides	Wastewater at different stages of Effluent treatment Process, input and output effluent.	Daily/ Monthly				
		5.	**Noise**		Spot Noise Level Measurement	At compressor house, pumphouse and outside the Plantboundary.	Quarterly				

Activity	Aspects	Mitigation Measures						Capital cost (In Rs. Lacs)	Recurring cost (Rs. Lacs/yr.)	Timeframe	Responsibility
	• Work Place Monitoring (Quarterly monitoring- Suspended Particulate Matter, Sulphur Dioxide & NOx, VOC's (Toluene, Xylene)	6.	**Solid Waste**	**Hazardous waste** **Non Hazardous Waste** **E-waste/ Battery Waste/ Biomedical Waste**	Records of quantity of generation, handling, storage and transportation (disposal) of solid and hazardous waste	Records of trucks carrying HW	Monthly				
		7.	**Greenbelt/Vegetation**		Status of Green belt development, plant growth, Survival rate, new species for plantation	Greenbelt area	Half yearly/ Yearly				
		8.	**Soil**		pH (10% aq. Solution) , Moisture, Bulk Density, Electrical Conductivity, SAR, Water Holding Capacity, Organic Matter, Total Organic Carbon, Sodium as Na, Potassium as K, Copper as Cu, Iron as Fe, Manganese as Mn, Boron as B, Calcium, Magnesium, Total Nitrogen, Total Phosphorus, Available Phosphorus, Available	At least two locations from area near Solid/ hazardous waste storage/ Dumping Area and one at lower contour location	Before and after monsoon				

Activity	Aspects	Mitigation Measures					Capital cost (In Rs. Lacs)	Recurring cost (Rs. Lacs/yr.)	Timeframe	Responsibility
				Potassium, Cation Exchange Capacity, Exchangeable Sodium, Available Micro-Nutrients (DTPA Extractable)- Manganese as Mn, Iron as Fe, Copper as Cu, Zinc as Zn						
		9.	**Carbon footprint monitoring**	Solar Panels having capacity 296 kWp is installed to reduce Consumption of electricity which indirectly reduce carbon footprint. Tree plantation will be done to reduce carbon footprint. Efforts will be taken to reduce fuel consumption e.g. use of well efficient insulation to heating equipment, optimization of process etc.	--	Yearly				
		10.	**Water footprint monitoring**	Rain water harvesting is being done and collected rain water is being used in utilities	--	Yearly				

<table>
<tr><th>Activity</th><th>Aspects</th><th>Mitigation Measures</th><th>Capital cost (In Rs. Lacs)</th><th>Recurring cost (Rs. Lacs/yr.)</th><th>Timefra me</th><th>Responsibil ity</th></tr>
<tr><td></td><td></td><td>& domestic purpose which minimizes the water footprint in monsoon season.
Treated waste water will be recycled & reused.
Regular maintenance of equipment's will be carried out to reduce wastage of water due to leaks.</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Energy conservation measures</td><td>• Carbon footprint
• Sustainabilit y
• Energy-Efficient Technologies</td><td>• Installed of solar Panels (296 kWp) & use of VFD's for reduction of consumption of electricity which indirectly reduce carbon footprint.
• Reduction of fuel consumption by using well efficient insulation to heating equipment
• Use of LED based lightning system
• Avenue plantation will be developed by planting, 2000 nos. trees.
<table>
<tr><th>Sr. No.</th><th>Particulars</th><th>UOM</th><th>Value</th></tr>
<tr><td>1</td><td>Total gross emissions</td><td>t CO2 eq / day</td><td>1.326</td></tr>
<tr><td>2</td><td>Total emissions reduction after implementation of mitigation measures</td><td>t CO2 eq / day</td><td>1.273</td></tr>
<tr><td>3</td><td>Reduction in emission</td><td>%</td><td>4.03</td></tr>
</table></td><td>132.0 (Existing 122 lac + Additional 10 lac</td><td>1 (Existing 0.5 lac+Additi onal 0.5)</td><td>During Operation phase</td><td>EHS Team</td></tr>
<tr><td>Rain Water Harvesting</td><td>• Water footprint
• Sustainability</td><td>• Water Collected during rainy season- 662.84 m^3.
• Rain water harvesting tank having capacity (25 KL) & use of rain water after filtration (sand filter) in utilities
• Regular maintenance of equipment to reduce wastage of water due to leaks</td><td>5.0 (Existing 0 lac + Additional</td><td>0.5 (Existing0 lac + Additional</td><td>EHS Team</td><td>Project Team/ EHS Team</td></tr>
</table>

Activity	Aspects	Mitigation Measures	Capital cost (In Rs. Lacs)	Recurring cost (Rs. Lacs/yr.)	Timefra me	Responsibil ity
			5 lac)	0.5)		
Implementation recommendation **hazop/Risk Assessment**	• Identification of Risks • Risk Analysis • Risk Evaluation • Risk Control and Mitigation • Monitoring and Review • Handling of hazardous chemicals like Xylene, Toluene, Acetic acid • Consequence analysis scenario considered is 10mm leakage from tank • The ALOHA output indicates that, in the worst-case scenario, the impact will (ERPG-3) extending up to a maximum distance of 70 meters	• **Fire hydrant system is provided along periphery of manufacturing plant, RM storage, FG storage, non-CCOE area** • **Wind direction socks** will be provided • DRY earth, sand or other non-combustible material will be provided at shed • Jumper system to inlet and out let pipeline will be provided while handling flammable solvents • **Leak Detection and Repair (LDAR) & alarm system** will be provided • **Closed feed system** for toxic materials to reduce fugitive emissions • **Flame proof electrical** in flammable solvent /gases handling area • Property insurance should be there • **Dyke for accidental spill containment** for ground storage tanks • **Sprinkler** system will be provided wherever necessary • VOC detector will be provided at suitable location in plant. • Work area monitoring for air born concentration of chemicals • **Periodic medical surveillance** of the employees • PPE: Protective clothing, SCBA, Face shield • Periodic mock drills will be conducted • **Storage of Inventory should be as per compatibility study** • **Safe Operating procedures (SOP)** will be followed strictly and **Onsite Emergency Plan** is available • Training will be provided for employees working in hazardous area	25.0 (Existing 20 lac + additional 5 lac)	2.0 (Exiting 1.5 lac+Additi onal 0.5)	During Operation phase	Project Team/ EHS Team
		Sub-total	**735.6**	**241.18**		
Corporate	• Biodiversity	CER Cost Rs. 0.22 Cr. (1.0% of the proposed capital cost of the project)	22.07	--	Within 2	EHS Team

Activity	Aspects	Mitigation Measures	Capital cost (In Rs. Lacs)	Recurring cost (Rs. Lacs/yr.)	Timeframe	Responsibility
environment responsibility (CER)	Conservation • Energy Conservation				year of obtaining EC & CTO	
		Grand-total	**757.67**	**241.18**		

1.13 Cost of the Project

As per the CTO and CA certificate, the existing investment is 25.93 Cr. An additional investment of 22.07 Cr is proposed. Thus, the total envisaged investment is 48 Cr.

1.14 Conclusion:

After undertaking a detailed survey of proposed location, process details, primary data collection and estimation of impacts in form of an EIA report it can be concluded that the project can be implemented in a safe manner adhering to national and local emission norms. Hence the project merits environment clearance.