EXECUTIVE SUMMARY

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT

FOR

PROPOSED 3 KLPD MAHUA FLOWER
BASED HERITAGE LIQUOR
MANUFACTURING UNIT & BOTTLING
PLANT AT S. NO. 8/1, 8/2 & 8/5, VILLAGEAMBIVALI T. KOTALKHALATI, TAL.
KARJAT, DIST. RAIGAD, STATE
MAHARASHTRA BY M/S. MOWA
DISTILLERIES PVT. LTD. (MDPL)

PROJECT PROPONENT

M/S. MOWA DISTILLERIES PVT. LTD. (MDPL)
AT S. NO. 8/1, 8/2 & 8/5, VILLAGE- AMBIVALI T.
KOTALKHALATI, TAL. KARJAT, DIST. RAIGAD,
STATE MAHARASHTRA.

1.0 Introduction

M/s. Mowa Distilleries Pvt. Ltd. is registered under company Act 2013 on 28th April 2024 (Corporate Identity Number is U11019MH2024PTC424371). Industry has Proposed 3 KLPD Mahua Flower Based Heritage Liquor Manufacturing Unit & Bottling plant at S. No. 8/1, 8/2, 8/5 Village- Ambivali T. Kotalkhalati, Tal. Karjat, Dist. Raigad, State Maharashtra.

Table 1: Proposed Products & Quantity

Sr.No.	Product	Capacity	Unit	
1.	Heritage Liquor	3000	Litres per day	
		4,000	Bottles per Day (Capacity of 750 ml)	

M/s. Mowa Distilleries Pvt. Ltd has obtained consent to Establish from the Maharashtra Pollution Control Board, Consent no. Format1.0/JD (WPC)/UAN No.0000205854/CE/2407002772 dated 29/07/2024 valid up to 29/07/2029.

Accordingly, the project proponent has submitted prescribed application along with prefeasibility report to the State Level Expert Appraisal Committee (SEAC), Maharashtra on dated 28.07.2025, State Level Expert Appraisal Committee (SEAC), Maharashtra granted Standard Terms of Reference (ToR Identification No.TO25B2504MH5771058N) for the project on dated 18.09.2025. Based on the Standard ToR, Environmental Impact Assessment study was carried out and draft EIA report has been prepared. As per EIA Notification dated 14th September, 2006 and its subsequent amendment, the project falls under Category "B", Project or Activity '5(g)' (non-molasses based) Distillery. The proposal is to be appraised at State Level (State Expert Appraisal Committee, Maharashtra) under B1 Category for grant of Environmental Clearance.

2.0 Project location

The project is located in S. No. 8/1, Village- Ambivali T. Kotalkhalati, Tal. Karjat, Dist. Raigad, State Maharashtra. Total land 1.20 ha is possession of Mowa Distilleries Pvt. Ltd. Latitude 19°01'05.1"N, Longitude: 73°29'17.3"E and at 132 m above MSL. The Project boundary is 1.6 km from Eco sensitive Zone of Bhimashankar Wild sanctuary. Project boundary is 4.7 km from Bhimashankar Wild sanctuary. Bhima Shankar Forest reserve is located at 7.02 km (NE Direction).

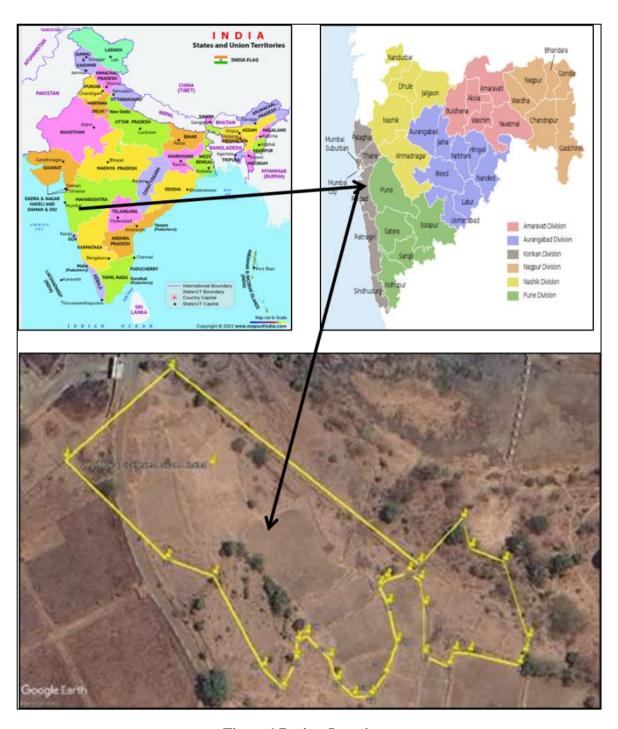


Figure 1 Project Location

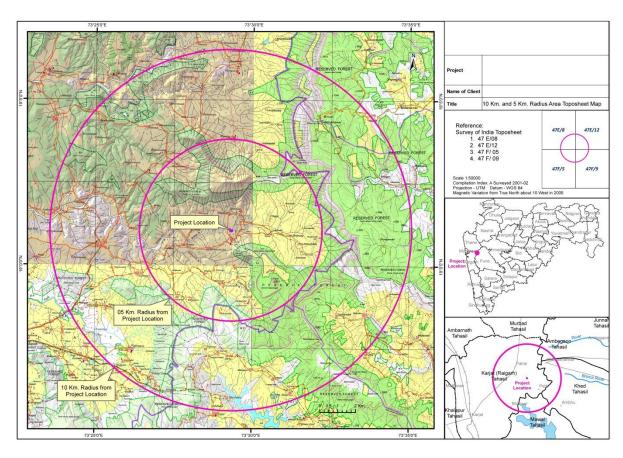


Figure 2: 10 Km Area Toposheet Map

Table 2: Salient Features / Environmental features within 10 km. radius

Salient Features / Environmental features within 10 km. radius	Distance w.r.t. site / Remarks		
National Park/ Wild life sanctuary / Biosphere reserve / Tiger Reserve / Elephant Corridor / migratory routes for Birds	Bhimashankar Wild sanctuary. Project		
Historical places / Places of Tourist importance / Archeological sites	Bhima Shankar temple is located at 7.80 km away from project site (NE Direction)		
Critically Polluted area	Not any		
Defence Installation	Not any		
Nearest Village	Ambiwali: 0.55 km (S direction)		
Nearest Airport	D.B. Patil International Airport Navi Mumbai: 42.05 km (W direction)		
Nearest Railway station	Neral Railway Station :17.92 Km (NW direction) Bhivpuri Road Railway Station: 17.32 km (NW direction)		

Forest	Bhima Shankar Forest reserve is located at 7.02 km (NE Direction)	
Water Body	Shillar River :0.030 Km	
Highway	NH 548 A- 7.1 Km (W Direction)	
Interstate Boundary	Nil	
Seismic zone as per IS-1893	IV	

0.3 PROJECT DESCRIPTION

Table 3: Project Description

Sr No	Particulars	Features		
1	Name of the Industry	M/s. Mowa Distilleries Pvt. Ltd.		
2	Location	S. No. 8/1, 8/2, 8/5 Village- Ambivali T. Kotalkhalati, Tal. Karjat, Dist. Raigad, State Maharashtra.		
3	Constitution of	Private limited		
4	Capacity of the Project	3,000 Litres per Day 4,000 Bottles per Day (Capacity of 750 ml) Plant		
5	Products	Mahua Flower Based Heritage Liquor		
6	No. of Working Days	365		
7	Total land	1.20 Ha Greenbelt Area: 0.396 Ha		
8	Raw material	Mahua flowers purchased from nearby area. 5000 Mahua flower, Kg/Day		
9	Fresh Water requirement	Industrial: 20 M3/day Domestic: 2.0 M3day		
10	Total Water	Industrial: 44 M3/day		
	Requirement	Domestic: 2.0 M3day		
11	Boilers	2 TPH		
12	DG set	125 KVA		
13	Power	150 KWh		
14	Steam	1.70 TPH		
15	Fuel	Briquettes/Husk 12 MT/day & Diesel 50 Ltr/Hr.		
16	Effluent Generation	Effluent; 30.0 CMD Sewage; 1.5 CMD		
17	Effluent Treatment	ETP followed by RO of capacity of 35 CMD. Sewage treatment Plant: 2 CMD		
18	APC system	Dust Collector & 30 m stack will be provided to 2 TPH Boiler & 6 m stack will be provided to 125 KVA DG Set.		
19	Solid Waste	Waste from Cooking Process (Solid residue of mahua flower): 1.5 MT/Day Boiler Ash: 2.04 MT/Day		

		ETP Sludge: 100 Kg/day
20	Manpower	40
21	Project cost	Capital Investment Rs.5.0 Crs.

4.0 BASIC REQUIREMENTS OF PROJECT

4.1 LAND REQUIREMENT

Total land of M/s. Mowa Distilleries Pvt. Ltd. is the 1.20 ha. Now establishment of Distillery will be in done on said plot.

4.2 RAW MATERIAL

- Total 5000 Kg/day Mahua flower will be required and Mahua flowers purchased from nearby area.
- Sulphuric Acid 0.5 kg per KL
- Defoam agent 0.25 kg per KL
- Nutrients (Fertilizers DAP)–0.5 kg per KL
- Biocides 0.5 kg per KL.
- Descaling agents Negligible

> Requirement of Raw Material & Specification

Physical Properties:

The physical property of any flower or fruit is an important parameter in determining its botany, appearance and its acceptability for further use and processing. The Mahua flowers are complete calyx is divided nearly to base, segments orates, sub-acute, and tomentose. The corolla is tubular, fleshy, cream colored or pale yellow, aromatic when mature, 1.5 to 2 cm long, companulate, lobes 8-9 ovate lanceolate, acute and erect. Flowers are arranged in dense fascicles, near the ends of the branches, below their terminal bud. The sundried flower has a dark reddish brown color and shrinks in size, resembling raisins.

Biochemical Composition:

Feed stock, chemicals, enzymes, yeast and its specifications Mahua Flowers (Dry Basis)

Mahua is free from stones, any foreign material. Such available Mahua will have:-

Mahua contains

• 65–70% : sugars

48–55% : reducing sugars14–18% : invert sugars

• 4.0–6.5% : crude protein

• 21–48% : ferrous

• 0.9–1.3 : fat • 2.5–5.2% : ash

• 1.77–2.66% : calcium

*Reducing Sugar: is a carbohydrate that is oxidized by a weak oxidizing agent in basic aqueous solution. The characteristic property of reducing sugar is that, in aqueous medium, they generate one or more compounds containing an aldehyde group.

*Invert Sugar: is a mixture of equal parts of glucose and fructose resulting from the hydrolysis of sucrose. It is found naturally in fruits and honey.

Sulphuric Acid

Concentrated, Commercial Grade, Composition as below value in % W/W

a. Sulphuric Acid: 98 MIN

b. Lead: 0.001 MAX

c. Arsenic: 0.0001 MAX

d. Iron: 0.03 MAX

e. Moisture: 2.00 MAX

Urea

In the form of prills or pellets with total Nitrogen not less than 46% W/W

Diammonium Phosphate (D A P)

In the form of granules. Composition as below. Values in % w/w

a. P2O5: 50 MIN

b. Nitrogen: 20 MIN

c. Arsenic: 0.0001 MAX

d. Iron: 0.01 MAX

e. Lead: 0.001 MAX

Antifoam

Turkey red oil. Composition as below, Value in % w/w

a. Degree of Sulphation: 6 MIN

b. Total Alkali (KOH): 3 MAX

c. Total Fatty Matter: 60 MIN

d. Total Ash: 8 MIN

e. pH: 6.5-7.5

4.3 WATER REQUIREMENT

The Total water requirement for 3 KLPD distillery unit will be 44 KLPD. Out of which 20 KLPD will be fresh water and 24 KLPD will be treated ETP water used for recycling. The fresh water required for domestic purpose will be 2 M3/Day.

4.4 STEAM & POWER REQUIREMENT

The steam of 1.70 TPH will be generated from Boiler of 2 TPH. Power of 150 kWh will be required for the unit which will be sourced from MSCDCL. For emergency, 1 DG set of 125 KVA will be installed within the plant area.

4.5 MANPOWER REQUIREMENT

• Construction Phase: 80 people will be required for the construction phase

• Operation Phase: 40 Persons, Manpower will be hired from local.

4.5 PROJECT COST

The Capital cost of the proposed distillery project will be as Rs. 5 Cr.

5.0 BASELINE ENVIRONMENT

The project is located in S. No. 8/1, 8/2 & 8/5, Village- Ambivali T. Kotalkhalati, Tal. Karjat, Dist. Raigad, State Maharashtra. Latitude 19°01'05.1"N Longitude: 73°29'17.3"E. The study area is considered to be within 10 km radius of the project site for baseline environment monitoring. The studies were conducted for the period of March to May 2025.

5.1 AMBIENT AIR QUALITY

Particulate Matter (PM _{10}): The minimum 46.4 μ g/m³ concentration of PM $_{10}$ was observed at Jambrung and maximum 49.7 μ g/m³ concentration was observed at Lobhewadi.

Particulate Matter (PM _{2.5}): The minimum 18.2 μg/m³ concentration of PM2.5 was observed at Bhaliwadi while maximum 22.74μg/m³ concentration was observed at Ambiwali.

Sulphur Dioxide (SO₂): The minimum 5.9 μ g/m³ concentration of SO₂ was observed at Shingdhol while maximum 7.2 μ g/m³ concentration was recorded at Shilar village.

Oxide of Nitrogen (NOx): The minimum 7.6 μ g/m³ concentration of NOx was observed at Shingdhol while maximum 9.11 μ g/m³ concentration was recorded at Ambiwali.

Carbon Mono-oxide (CO): The average minimum 8 hourly concentration for CO was found to be 0.47 mg/m³ at Project Site while maximum concentration was recorded 0.6 mg/m³ at Shingdhol & Shilar.

Inference: All the parameters were found well within the prescribed limits of NAAQ Standard, CPCB.

5.2 Noise Level

Noise monitoring was carried out as per MoEF and CPCB guidelines. To understand the Noise Quality with respect to zone category, nine representative locations were selected. Noise monitoring was carried out from time 06:00 Hrs to 22:00 Hrs and Night Time – 22:00 Hrs to 06:00 Hrs. Obtained results are compared with Noise pollution rules 2000. Higher noise level recorded at project site due to the project activities and vehicular movement.

All values during day and night period are under the permissible standards.

5.3 SURFACE WATER ENVIRONMENT

- **pH:** pH of the all-surface water sample ranges from 7.2 to 8.04.
- Total Dissolved Solids: The dissolved solids consist mainly of bicarbonates, carbonates, sulphates, chlorides, nitrates and possibly phosphates of calcium, magnesium, sodium and potassium. The amount of dissolved solids present in water is a consideration for its suitability for domestic use. Results show the ranges of TDS 107 mg/l to 174 mg/l.
- Biological Oxygen Demand (BOD): The BOD concentration in all samples is below 5mg/L.
- Chemical Oxygen Demand: The recorded results of COD range is below 20 mg/l.

M/s. Mowa Distilleries Pvt. Ltd.

- Total Hardness: The desirable limit for total hardness, as per the Indian standards is 200 mg/lit and the values observed in samples are below the desirable ranging from 61 mg/lit to 100 mg/lit.
- **Chloride:** The concentrations of the chlorides of all samples were between 11.4 and 30 mg/lit.
- Sulphate: The concentration values below from 5 mg/lit to 30 mg/lit.

5.4 GROUND WATER ENVIRONMENT

- **pH**: The pH is a measure of the activity of the (solvated) hydrogen ion. The range of pH is neutral to slightly alkaline (7.35 to 8.1)
- Total Dissolved Solids: The dissolved solids consist mainly of bicarbonates, carbonates, sulphates, chlorides, nitrates and possibly phosphates of calcium, magnesium, sodium and potassium. The amount of dissolved solids present in water in the range of 278 to 486 mg/l.
- Total Hardness: The values of the samples analyzed are in the of 170 to 198 mg/l
- Chloride: The chloride values are in the range on 20 to 70.8 mg/l
- **Sulphate:** The concentrations of sulphates in the in the range on 19 to 45 mg/l.

5.5 SOIL ENVIRONMENT

- The physical properties of soil determine the aeration of the soil and the ability of water to infiltrate and to be held in the soil, Color, Bulk density, Water Holding Capacity etc.
- The soil being of friable consistency, the bulk density & water holding capacity of the soil is in the range of 0.67 to 0.75 g/cm 3 & 46 52% respectively.
- Soil pH has several impacts on plant nutrients, plant growth, microbial activity as well as the cation exchange capacity (CEC) of soil. The availability of plant nutrients is affected more by pH than any other factor and maximum amounts of macronutrients are available for plants at pH 6.5–7.5. The pH of the soil in the study area is mildly alkaline in reaction having a pH in the range of 6.8-7.8. The Electrical Conductivity of the soil extract in the study area is in the range of 324-455 μS/cm which is less than 2 mS/cm indicating no salinity problem to be expected in the soil. CEC is between 0.66 to 0.75 meq/100g, moreover, it can be interpreted that soil has Moderate productivity & high absorption capacity.

- Analysis shows that the concentration of organic matter is in the range of 2.8 to 6% and total organic carbon is in the range of 1.7 to 4.8 %.
- Phosphorus plays a key role in photosynthesis, the metabolism of sugars, energy storage and transfer, cell division, cell enlargement and transfer of genetic information. Nitrogen is very important and needed for plant growth. Lack of nitrogen shows up as general yellowing (chlorosis) of the plant. Available phosphorous was found the highest in Dhotre (25 kg/ha) and lowest in Tembhare & Dhamni (15 kg/ha) whereas available nitrogen was in the range of 123-220.4 kg/ha.
- For optimal metabolic processes and development, plants need several different inorganic micronutrients at microgram levels. Insufficient quantities of these components constitute a limiting factor in plant growth, but excessive amounts in soils may have negative consequences. Higher concentrations of certain metals in the soil might also lead to leaching of these metals in the groundwater causing groundwater pollution. The concentrations of different heavy metals were found to be in the range such as Copper (0.11-0.25 kg/ha), iron (3-4.5 kg/ha) and zinc (2.4-3.4 kg/ha).

5.6 ECOLOGY

As per guidelines of MoEF for Environmental Impact Assessment, the study area was restricted upto 10 km periphery of the project site. Detail assessment was carried out for the determination of Floral, Fauna, Avifauna and Aquatic Ecology species.

Based on field survey Primary data were generated by preparing a general checklist of the plants encountered in this area. The study shows overall 123 plant species comprising of 35 trees, 25 shrubs, 39 herbs, 13 climbers and 11 grasses in study area. Field observations of fauna were carried out in the study area. The commonly available mammals, birds, amphibians, reptiles, butterflies, dragonflies and damselflies within 10km surroundings were enumerated. The survey revealed that there were 3 species of wild mammals observed in the study area viz., Sambhar (*Rusa unicolor*), Bonnet Macaque (*Macaca radiata*) and Hanuman langur (*Semnopithecus entellus*) etc. are present in the villages in the study area.Based on survey around 15 species of mammals are present. A significant proportion of the avifaunal species recorded in the project study area were resident birds. During the survey, 19 species were directly observed in their natural habitats, which included bushy vegetation, barren rocky grounds, and areas adjacent to human settlements. Indian Spot-billed Duck (*Anas poecilorhyncha*), Ashy Prinia(*Prinia socialis*), Wire-tailed Swallow (*Hirundo smithii*) etc.

are observed. 13 reptile species such as Common Indian krait (*Bungarus caeruleus*), Indian cobra (*Naja naja*), Bamboo pit viper (*Trimeresurus gramineus*) etc. and 4 amphibian species of frogs are found during the survey. 5 butterfly species such as Hill Sergeant (*Athyma opalina*), Lemon Pansy (*Junonia lemonias*) etc. are also observed during the survey.

5.7 SOCIO ECONOMIC SURVEY

According to recent censes (2011) while dealing study area (10 Km radius from project site) as per secondary data the total population is 55734 in 11372 households. Male population is 28249 and female population is 27485. Highest population in study area is in Kashele village (2875). There are 11372 households in the study area and the average size of household is 5 members per household in the study area. The dependent population below 6 years is 7031 (12.6 % of the total population) in the study area. The sex ratio of the study area is 973 females per 1000 males. The ratio of Scheduled Caste population in the study area to the total population is 2.72 %. Whereas the Scheduled Tribe population in the study area is 51.07%. Together they constitute 53.78% of total population of the study area within 10 km radius. Average literacy rate is 35.99%, whereas the male literacy is 39.63% and female literacy is 60.37% in the study area, the female literacy rate is higher than male in the study area. total working population is 46.92 % and non-working population is 53.06%, out of working population almost 49.80 % peoples are in main working population category. And 33.34 % Population is in marginal population category. Cultivators (7460) and agricultural labour (5659) together constitute 50.17% of the total workers. Non-working population in study area is 29586 which are 53.08 % out of total population.

6.0 Environment Impact and Its Mitigation Measures

6.1 AIR ENVIRONMENT

- For the 2 TPH boiler, 30 M stack height and Dust Collector will be provided.
- Stack emissions will be regularly monitored by external agencies on periodic basis to check the efficiency of air polluting control devices and necessary action.
- Online Monitoring system is installed and connected to CPCB and MPCB server will be provided to 2 TPH Boiler.
- To control of the airborne fugitive emissions from the ash handling area will be achieved through regular water sprinkling in this area.
- The green belt development at ash handling areas will be undertaken.

6.2 LAND ENVIRONMENT

- The project site of 1.20 Ha area is identified for Project. The main sources which will affect the land environment are by products from proposed activity i.e. ash, ETP effluent & sludge etc.
- After completion of the construction phase, the surplus earth shall be utilized to fill up the low-lying areas, the rubble shall be cleared and all un-built surfaces will be reinstated;
- There shall be minimum concreting of the top surfaces so that there is a scope for maximum groundwater recharge due to rainfall; and Plantation outside the plant premises, in the nearby villages shall be encouraged by supplying free saplings to the villagers.
- Usage of appropriate monitoring and control facilities for construction equipment's deployed.
- All hazardous waste shall be securely stored, under a shed for eventual transportation and disposal to the authorized dealers.
- The solid waste generation due to workers working at site will be segregated and will be transported and disposed to waste disposal facility.
- Chemicals/Paints etc. used during construction phase will be stored safely.

6.3 Noise Environment

- All rotating items will be well lubricated and provided with enclosures as far as
 possible to reduce noise transmission. Vibration isolators will be provided to reduce
 vibration and noise wherever possible.
- Manufacturers and suppliers of machine/equipment like cane handling equipment's
 i.e. Belt Conveyor, Compressors, STG, Turbine and generators will be manufactured
 as per OSHA/ MoEF guidelines.
- The personnel safety such as ear muffs, ear plugs and industrial helmets will also act as a noise reducer will be provided workers.
- Acoustic laggings and silencers will be provided in equipment wherever necessary.
 The compressed air station will be provided with suction side silencers. Ventilation fans will be installed in enclosed premises.
- The silencers and mufflers of the individual machines will be regularly checked.

6.4 WATER ENVIRONMENT

• Waste Water Treatment: Fresh Water requirement for proposed will be 22 M3/day.

- Spent wash/POT ALE is the main effluent in Distillery industry. Other miscellaneous
 effluents generated from distillery unit are cooling tower blowdown, boiler blow
 down, and DM Backwash.
- For treatment of whole stillage, MDPL has decided to install ETP of capacity 35 KLD followed by RO.
- Sewage will be treated in 2 KLD Sewage treatment plant.
- ETP system followed by RO It will be based on modern concept to obtain Zero liquid Discharge. Treated sewage will be used for Gardening and Plantation purpose. Storm water network will be designed for the entire plant area. Rain water harvesting scheme will be carried out in order to improved ground water resources of the area.

6.5 SOLID WASTE MANAGEMENT

Briquettes/Husk will be used as fuel for 2 TPH Boiler. Mahua Flowers will be used as raw material for distillery unit.

Table 4:Solid waste generation and disposal

SR. No.	Details of the Solid Waste	Quantity	Mode of Disposal
1.	Waste from Cooking Process (Solid residue of mahua flower)	1.5 MT/Day	Will be used as Manure
2.	Boiler ash	2.04 MT/day	Will be sold to brick manufacturers
3.	ETP Sludge	100 Kg/day	Will be used as Manure

6.6 GREENBELT DEVELOPMENT

Around 990 Nos. of trees will be planted over an area of 0.396 acres at the rate of 2500 trees per Ha.

- Special attention is planned to maintain green belt in and around the factory premises.
- Adequate provisions shall be made to facilitate daily watering of all plants and lawns.
- Special attention provided during summer to ensure that the green belt does not suffer from water shortage.
- Development & maintenance of green belt to be considered as a priority issue.
- No outside soil is brought for any building/ greenery developments.

6.7 SOCIO ECONOMIC ENVIRONMENT

- Increase in employment opportunities so as people will not migrate outside for employment.
- Increase in literacy rate.
- Growth in service sectors
- Improvement in prices of indigenous produce and services benefiting local people such as increase in land value, house rent rates and labour wages.
- Improvement in socio-cultural environment of the area.
- Improvement in transport, communication, health and educational services.
- Increase in employment due to increased business, trade, commerce and service sector.

Thus the overall impact on the socio economic environment of the region is expected to be beneficial for the local population

7.0 Environment Monitoring

Based on the baseline data collected on various environmental parameters in the study area and the prediction and assessment of impacts due to the proposed project, a comprehensive Environmental Monitoring Program is required to be developed, to satisfy the various statutory requirements for discharges and emissions and also to identify the trend of various environmental parameters.

Environmental monitoring program covers various areas like –

- Ambient air quality
- Water quantity and quality
- Effluent quality
- Noise
- Soil characteristics
- Ecology
- Hazardous waste management
- Safety/Health checkup.

8.0 CORPORATE ENVIRONMENT RESPONSIBILITY (CER)

As per New Office Memorandum Published by MOEF &CC, New Delhi on 1st May 2018 regarding applicability of CER and Budget to the decided towards CER activities.

As an additional part of the EMP cost, the proponent proposes to invest 10 lakh (2% of the project cost of 5 Crores) before commencement of the project, to be considered for implementing the activities in the context of the local scenario of the area.

Table 5: Budgetary provision for CER activities

Proposed Programme	Amount in Lakhs
Infrastructures Development in schools of Ambivali Village	10.00
Drinking water facility, sanitation for boys and girls	
Total	10.00

9.0 COST FOR ENVIRONMENT MANAGEMENT PLAN

Table 6: Cost of Environmental Protection Measures

Sr.	Environment Aspect	Capital Cost	Recurring Cost
No.	Environment Aspect	(in Lacs)	(in Lacs)
1	Air Pollution Control (Stack & Dust Collector)	20.00	5.0
2	Effluent treatment Plant	30.00	5.0
3	Green Belt Development	5.0	1.0
4	Rain Water Harvesting	15.0	2.00
5	Environment Monitoring (Stack and ETP)	2.5	1.65
6	Solid Waste Management (Ash & ETP Sludge)	2.5	1.0
7	Occupational Health	5.0	0.5
8	Wild life Management Plan	10.0	-
	Total	90.0	16.15