EXECUTIVE SUMMARY
Of

Draft Environmental Impact Assessment Report

Baseline Study Period March 2021 to May 2021

Production of Ethanol/ENA of capacity 105 KLPD (Grain based), 10 KLPD (Malt), Cogeneration power plant 4 MW (Captive generation), 5 TPD Corn oil plant and by-product 75TPD CO2 & 80 TPD of DDGS

Plot no. E- 1/5A, 1/5B Baramati Industrial Area Tandulwadi, Tal. Baramati, Dist. Pune, Maharashtra

By

M/s CAPOVITEZ PRIVATE LIMITED

EXECUTIVE SUMMARY

1. Project in brief

Considering the requirements of fuel ethanol to be blended in petrol as per the National Biofuel Policy of Indian government and simultaneously increase in requirement of industrial and potable alcohol, Capovitez Private Limited (CPL) has decided to install integrated project for production of RS/AA/ENA/Ethanol of capacity 105 KLPD (grain based), 10 KLPD (malt), Cogeneration power plant of 4 MW, 5 TPD corn oil plant and by-product 75 TPD CO_2 and 80 TPD of DDGS. CPL is classified as non-govt company and is registered at Registrar of Companies (RoC), Pune vide registration number no U15490PN2021PTC198255 dated 3rd Feb 2021. The factory will operate for 330 days in a year on Rice and Maize as raw material. The distillery proposes to achieve zero discharge by decantation, multi effect evaporation followed by Distillers' Wet Grain with Soluble (DWGS) dryer and the entire spent wash will be converted to Distillers' Dry Grain with Soluble (DDGS) to achieve zero discharge.

2. Project location

The project is located at Plot no. E- 1/5A, 1/5B Baramati Industrial Area Tandulwadi, Tal. Baramati, Dist. Pune, Maharashtra. The land is in full possession of the project proponent. The geographical co-ordinates of the site are 18°11'46.95"N and 74°36'30.68"E. There are no Eco-sensitive zones, Biosphere Reserves, National Parks and Wild Life Sanctuaries within 10 km study area of the project site. Project location on MRSAC map of Baramati taluka of Pune district, project boundary on google imagery and plant layout is shown in below Figures. Environmental setting of the project site is given in below table.

Table 1: Environmental Setting in and around the proposed Project site

Sr. No.	Particulars	Description
1.	Impact Habitation	Ganesh Nagar: 1.18 km towards NE Vanjarvadi: 1.5 km towards ENE Tandulwadi: 1.58 km towards SW Ghadgewasti: 1.26 km towards S
2.	Nearest Railway Junction	Tandulwadi: 1.9 km towards SW Baramati : 10.7 km towards SW
3.	Nearest railway line	0.4 km towards West
4.	Nearest Airport	Baramati Airport : 3.72 km towards NW

5.	Nearest IMD station	Baramati IMD : 5.9 km towards SW
6.	Nearest Water body	Stream near Ganesh Nagar : 0.2 km towards East Karha River: 5.9 km towards SW Nira left Canal: 5.39 km towards SW
7.	Nearest Road	MIDC Road – 0.03 km towards East
8.	Nearest Highway	SH 68 (Baramati-Bhigvan Road) : 1 km towards East
9.	Ecological sensitive area / Reserve Biosphere within 5 km / Reserve Forest	None Chinkara Forest Park: 0.5km towards SW

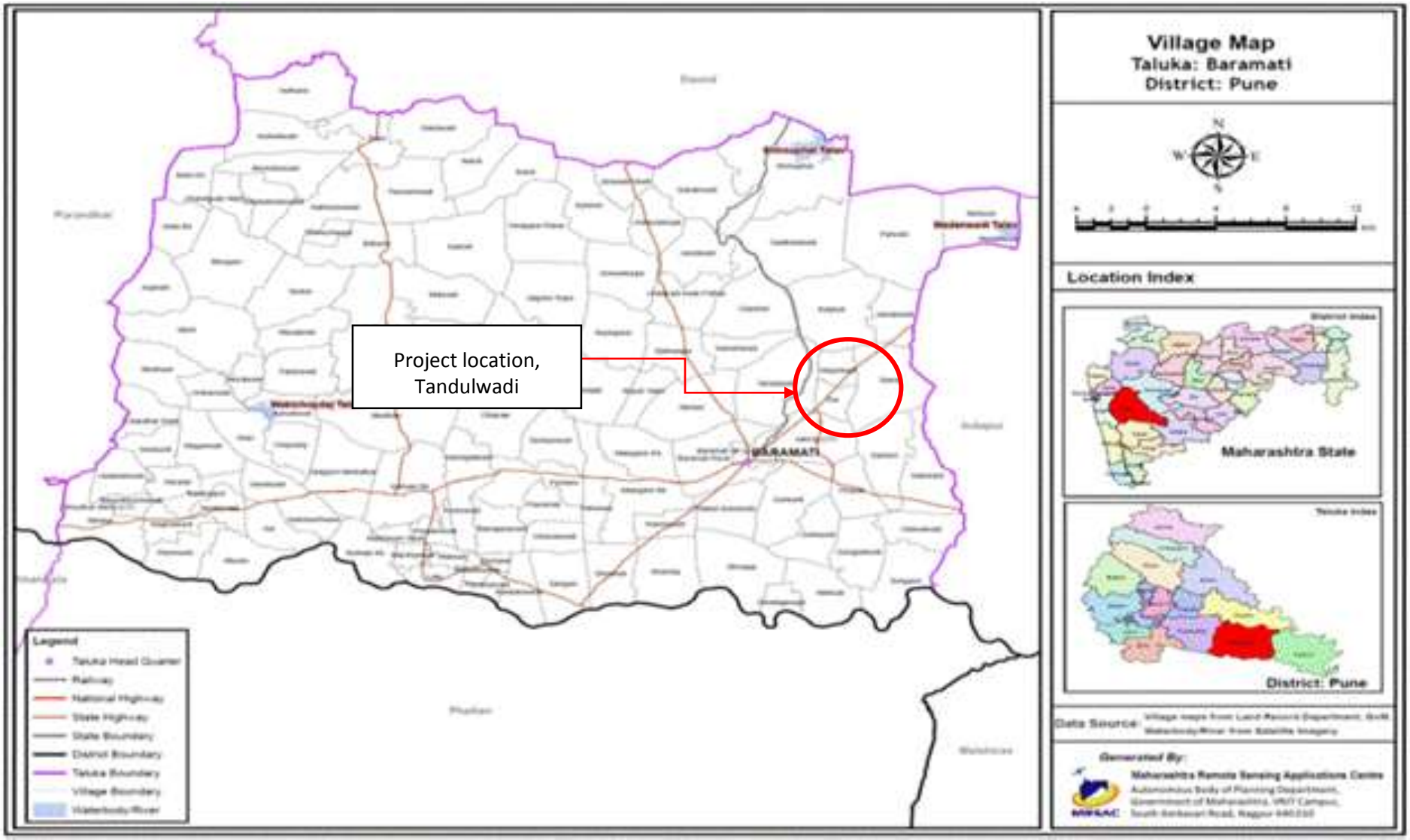

Figure 1: Map showing general location of the proposed project on MRSAC map

Figure 2: Google image of the Project Site with Boundary coordinates

Figure 3: Plant layout

3. Project information in brief

Table 2: Salient features of integrated project

Particulars	Details
Project	Production of Ethanol/ENA of capacity 105 KLPD (Grain based), 10 KLPD (Malt), Cogeneration power plant 4 MW (Captive generation), 5 TPD Corn oil plant and by-products 75TPD CO2 & 80 TPD of DDGS
Location	Plot no. E- 1/5A, 1/5B Baramati Industrial Area Tandulwadi, Tal. Baramati, Dist. Pune, Maharashtra.
Screening category (as per SO 1533 as timely amended)	5 (g) – "Distilleries" Category: "B" *(Non-molasses based distilleries< 200 KLD)*
Land Type of Project Site	Private Industrial Plot situated in a notified industrial area/estate
Product	RS/AA/ENA/Ethanol of capacity : 105 KLPD Malt: 10 KLPD Cogeneration power plant: 4 MW Corn oil plant: 5 TPD
By-product	CO_2 : 75 TPD *(For industrial beverage grade/ dry ice)* DDGS: 80 TPD
Basic Raw Material	Rice : 238.10 TPD Maize : 250 TPD
Operation days	330 days
Total Plot Area	7.94 ha.
Green belt Area	2.62 ha. *(33% of total plot area)*
Water requirement	Total fresh water requirement: 788 KLD Industrial: 783 KLD Domestic: 5 KLD
Source of water	MIDC Baramati *(Permission obtained)*
Boiler	40 TPH with 4 MW TG
Stack details	Stack height: 40m with Electro Static Precipitator Stack dia: 1.8m
Steam requirement	35.0 TPH
DG Set	500kVA*2
Fuel for Boiler	Husk and Agricultural waste: 337 TPD **or** Coal : 160 TPD *(Optional fuel in case scarcity of Agri waste and moisture problems during monsoon)*
Power requirement	Construction phase: 300KW-500 KW *(State Electricity Board)* Operation phase: 3 MW *(Own captive power Plant)*
D.G. Set	500 kVA*2
Man-power requirement	During Construction: 100 Nos. During Operation: 77 *(skilled and unskilled)*
Total project cost	123.21 Cr

EMP capital cost	3.78 Cr
CER Cost	1.84 Cr *(Greenfield project: 1.5% of total project cost)*
Total effluent generation	Total effluent generation: 1608 KLD Raw stillage: 675 CMD *(Decanter followed MEE followed by dryer)* Total effluent: 700 CMD *(CPU)* Domestic: 4 KLD *(Septic tank followed by soak pit)*
CPU capacity	700 CMD
Solid & Hazardous Waste Generation	Spent oil (5.2): 0.05KLD *(reused as lubricant)* Coal ash : 56TPD *(ash generated will be sold to brick manufacturers)* Agri based ash: 10 TPD *(used as manure)*

4. Process Description

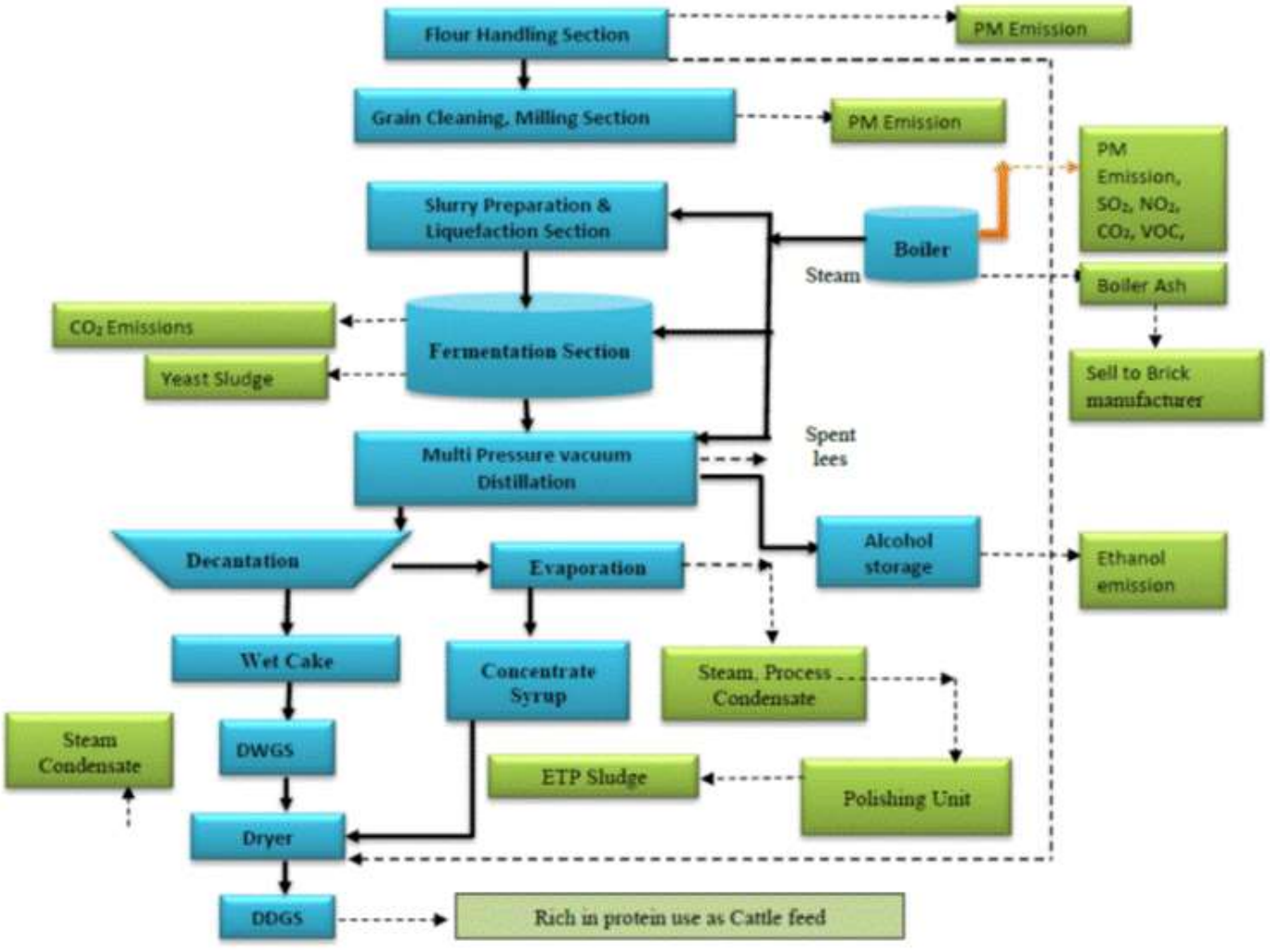

Figure 4: Manufacturing flowchart for the distillery

5. Description of the environment

The study area is as per approved ToR vide letter No. SIA/MH/IND2/63556/2021 dated 3.09.2021. The study period conducted was from 1st March 2021 to 31st May 2021. Baseline study has been conducted as per EIA Manual of the MoEF&CC and methodologies mentioned in Technical EIA Guidelines Manual for Distilleries by IL&FS Ecosmart Ltd., approved by MoEF&CC.

Table 3: Baseline monitoring parameters and frequency

Components	Parameters	Frequency	Observation
Ambient Air Quality	As per the NAAQS dated 16th November 2009: PM2.5, PM10, SO2, NOx	11 Locations – Nearby impact zones 24 hourly samples Twice a week for 3 months Upwind (2 no.) Crosswind (6 nos.) Downwind (2 nos.) Core (1 no.)	All parameters are within NAAQ standards.
Meteorology	Wind Speed, Wind Direction, Temperature, Relative Humidity and Rainfall	Microprocessor based Weather Monitoring Station – For Study Period Continuous hourly recording. Secondary data like average annual meteorological data was collected from IMD – Nanded.	Monthly total annual avg. rainfall 531 mm (IMD Baramati 1981 – 2010) Highest recorded temp: 42 ^{0}C Lowest recorded temp: 8.9 ^{0}C
Noise Level	Noise Level in dB(A)	1 Locations – project site 8 locations – nearby village (impact zone)	The Noise monitoring results at all monitoring locations are within the prescribed standards shown in above Table. The maximum noise level in day time was 71.2 dB (A) and in night time was 66.3 dB (A) which was observed at Project Site. Minimum noise levels in Day time was 48.6 dB (A) was observed at Vidya nagari and minimum noise levels in night time was 41.1 dB (A) was observed at Bayaji Nagar, as both of these are rural residential areas.
Water Quality	Physical, Chemical, and	9 Locations – Ground Water	**Ground water:** TDS was found to be higher in five sampling locations and Total Hardness was high in all

	Biological parameters	4 Locations – Surface Water	sampling locations except Katphal. TDS and total hardness were found highest at Baramati i.e. 715 mg/l and 329.26 mg/l . **Surface water:** Looking at the results it can be stated that surface water of Nira left Canal and Lake near Baramati Airport falls under classification A (Drinking Water Source without conventional treatment but after disinfection) and surface water of Ganesh nagar stream and Karha River fall under Classification B of the inland surface water standards which mean it can be used as organized outdoor bathing purpose.
Soil	As per BIS standards	8 Locations – Nearby villages Once during study period	When obtained results are compared with standard soil texture classification, it can be concluded that soil texture of study area is Silty Clay Loam. Looking at the results, it can also be said that the soil fertility of majority of soil samples have very low to low fertility.
Land use pattern	Land use for different categories	Once in a study period Secondary Data	It can be observed that the maximum percentage (i.e. 71.88%) of land is under “Crop land” followed by “Scrub land” which is approximately 16.21% of the study area.
Ecology	Existing terrestrial and aquatic flora and fauna	Once in a study period General in 10 km radial study area and data collected around the project site through field visits	Accasia sp. Azadirachta indica, Cassia tora, Senna siamea etc. Common mormon, Lemon pansy, green bee-eater, drongo etc.
Socio – economic aspects	Population, sex ratio, income, education, living facilities, amenities etc.	Once in a study period Based on data collected from the year 2011 Census Abstract.	Sanitation facilities are unsatisfactory, Power supply facility is available in almost villages and town, Drinking water sources is mostly from PWD water supply, Medical facilities in terms of primary health center and primary health sub centers in the rural areas are good.

Geology and Hydrogeology	Lithological types, drainage basins, etc.	Field observations in 10 km study area and from secondary data from authenticated sources like GSI, SoI, etc.	The district is uniformly laid by the Deccan lava flows in the form of horizontally bedded sheets, belonging to the Deccan trap formation of basaltic composition. Pune district is underlain by basaltic lava flows and alluvium only

6. Anticipated Environmental Impacts

Anticipated environmental impacts due to operation of the proposed project are given in below

Table 4

Table 4: Anticipated Impacts

Environmental Facets	Anticipated Impacts
Air Environment	Probable increase in concentration of air pollutants due to process, fugitive, and utility emissions.
Water Environment	Generation of industrial & domestic wastewater.
Land Environment	Impacts on land due to improper disposal of hazardous/ solid waste.
Ecological Environment	Positive as greenbelt of appropriate width will be developed and maintained by the factory in the area. No impacts are envisaged on aquatic flora & fauna as there will be zero effluent discharge outside the plant premises.
Social Environment	Overall development of the area in respect of the infrastructure development, educational growth, health facilities etc.
Economic Environment	Positive impacts on economy of the region as the rural economy will get a big boost due to purchase of large quantity of grain, rice husk etc.
Noise Environment	Minor increase in noise level within the project area.
Occupational Health & Safety	Major health hazards are identified in worst case scenario.

7. Environmental Monitoring Program

Table 5: Environmental monitoring schedule

Sr. No.	Particulate	Parameters	Number of locations	Frequency
1.	Ambient air quality	PM_{10}, $PM_{2.5}$, SO_2, NOx, VOC etc.	Ambient air quality at minimum 3 locations. Two samples downwind direction at 500m and 1000m respectively. One sample upwind direction at 500m.	Monthly

2.	Stack gas	PM, SO_2 and NOx	One stack	Monthly
			Online stack monitoring is installed for existing system.	-
3.	Work place	$PM_{2.5}$, SO_2, NOx, O_3	Process emission in workplace area/plants (for each area/plant minimum 2 locations and 1 location outside plant area near vent)	Monthly
4.	Waste water	pH, EC, SS, TDS, O&G, Ammonical Nitrogen, COD, BOD, Chloride, Sulphides etc.	Wastewater from Inlet & outlet of CPU	Monthly
			Online Monitoring machine will be installed at CPU.	
5.	Surface water and ground water	pH, Salinity, Conductivity, TDS, Turbidity, DO, BOD, Phosphate, Nitrates, Sulphates, Chlorides, Total Coliforms (TC) & *E.Coli*	5 location Ground water and 1 location Surface water.	Half yearly
6.	Solid waste	Ash, Yeast sludge	• Process dust generated sludge and ash. • Before use as manure, if used as manure	Monthly
7.	Soil Organic and Inorganic matter	N, P, K, moisture, EC, heavy metals etc.	At lands utilizing manure and treated effluent, 3 locations	Pre – monsoon and Post monsoon
8.	Noise	Equivalent noise level - dB (A) at min. Noise Levels measurement at high noise generating places as well as sensitive receptors in the vicinity	5 location At all source and outside the plant area.	Monthly
9.	Green belt	Number of plantation (units), number of survived plants/ trees, number of poor plant/ trees.	In and around the plant site	Monthly
10.	Soil	Texture, pH, electrical conductivity, cation exchange capacity, alkali metals, Sodium	2-3 near Solid/ hazardous waste storage. At least five locations from Greenbelt and area where	Quarterly

		Adsorption Ratio (SAR), permeability, porosity.	manure of biological waste is applied. Near spent wash storage lagoon	
11.	Occupational health	Health and fitness checkup of employees getting exposed to various hazards and all other staff	All worker	Yearly/ twice a year
12.	Emergency preparedness, such as fire fighting	Fire protection and safety measures to take care of fire and explosion hazards, to be assessed and steps taken for their prevention.	Mock drill records, on site emergency plan, evacuation plan	Monthly during operation phase

8. Additional Studies

The following Additional Studies are to be done in reference to the awarded Terms of References issued by MoEFCC, New Delhi.

- Public Consultation

9. Project Benefits

- The nutrients present in the spent wash will be used as a cattle feed after converting it to DDGS.
- The rural economy will get a big boost due to purchase of large quantity of grain, rice husk etc.
- The unit will be pollution free since there will be no effluent discharge. So it's an eco-friendly project.
- Distillery is aimed to improve the technical efficiency of the unit in terms of steam utilization and power consumption
- Total 184 lakhs will be dedicated towards Corporate Environment Responsibility

10. Environmental Management Plan

Following mitigation measures shall be adopted by factory to minimize the impact of project on the surrounding environment.

Table 6: EMP for various Environmental Attributes

Environmental Attributes	Mitigation Measures
Air Quality Management	**Process Emission** • The whole process will be carried out in closed condition so as to avoid any chances of VOC emissions. **Utility Emission** • The D.G. set shall be isn standby arrangement and will only be used during power failure. • Adequate stack height of 40 m is provided to Boiler stack along with Electrostatic Precipitator **Fugitive Emission** • The main raw material and product shall be brought in and dispatched by road in covered enclosures. • Dust suppression on haul roads shall be done at regular intervals.
Water & Wastewater Management	• The proposed distillery would be based on "Zero Liquid Discharge "technology. • Proposed Distillery: Raw stillage 675 TPD, total effluent generation from various units will be 714 CMD out of which from grain based distillery will be 700CMD, Malt and CO2 plant will be 10CMD and domestic activity will be 4 CMD. • Raw stillage will be sent to decanter followed by MEE followed by dryer to produce DDGS. • Spent lees, blow down and condensate will be treated in CPU of capacity 700 CMD and treated water will be recycled. Treated water is recycled/reused in greenbelt development and ferti-irrigation. • Domestic wastewater will be partially treated in existing ETP and partially through septic tank with soak pit. • Proper storm water drainage will be provided during rainy season to avoid mixing of storm water with effluent. • Rain water harvesting from the catchment area will be done
Noise Management	• Closed room shall be provided for all the utilities so as to attenuate the noise pollution. • Acoustic enclosure shall be provided to D.G set. • Free flow of traffic movement shall be maintained. Earmuffs shall be used while running equipment's of the plant. • Proper maintenance, oiling and greasing of machines at regular intervals shall be done to reduce generation of noise. • Greenbelt shall be developed around the periphery of the plant to reduce noise levels.
Odor Management	• Odor shall be primarily controlled at source by good operational practices, including physical and management control measures.

	• Better housekeeping will maintain good hygiene condition by regular steaming of all fermentation equipment. • Use of efficient biocides to control bacterial contamination. • Control of temperature during fermentation to avoid in-activation/ killing of yeast. • Avoid staling of fermented wash.
Solid & Hazardous Waste Management	• The hazardous waste i.e. spent oil generated shall be very minor and shall be burnt in boiler along with fuel/ sent to authorized recycler. • Boiler agri ash will be used as manure. • Boiler coal ash will be sold to brick manufacturers
Traffic Management	• Culverts shall be maintained. • The trucks carrying raw material & fuel shall be covered to reduce any fugitive dust generation. • Good traffic management system shall be developed and implemented for the incoming and outgoing vehicles so as to avoid congestion on the public road.
Green Belt Development / Plantation	• Plantation shall be done as per Central Pollution Control Board (CPCB) Norms. • The plantation in and around the plant site helps/will help to attenuate the pollution level. • Native species shall be given priority for Avenue plantation.
Corporate Environment Responsibility	• An amount of INR 184 lakhs will be allocated for CER activities in the coming 3 years which will be utilized on the basis of requirement for weaker sections of the society for next 3 years.
Occupational Health & Safety	• Factory shall monitor the health of its workers before placement and periodically examine during the employment • Health effects of various activities and health hazard if any observed shall be recorded and discussed with the health experts for corrective and preventive actions need to be taken by the industry • All safety gear shall be provided to workers and care shall be taken by EMC that these are used properly by them. All safety norms shall be followed

11. Project Cost Estimate

Table 7: Environment Management Cost

Sr. No	Construction phase (with Break-up)	Capital Cost (Amount in lakhs)	O & M (Annual) (Amount in lakhs)
1.	Environmental monitoring	_	1.5
2.	During site preparation	_	2
3.	Noise and solid waste management	_	1.5
4.	Water and waste water	_	2.5
5.	Occupational health	_	2.5
6.	Greenbelt development	_	5
	Total	_	**15**
Sr. No	**Operation Phase (with Break-up)**	**Capital Cost (Amount in lakhs)**	**O & M (Amount in lakhs)**
1.	Air and Noise pollution	170	5
2.	CPU	150	2
3.	Environmental Monitoring (Air, water, waste water, Soil, Solid waste, Noise)	-	3
4.	Occupation health	5	5
5.	Green belt	25	5
6.	Solid waste	2.5	2
7.	Rain water harvesting	25	5
	Total	**377.5**	**27**

12. Project Benefits

- Readily available infrastructure, fuel, & water for renewable energy power generation project.
- The economic benefits
- Entire integrated project is proposed to be set up based on the stand-alone commercial viability of each component of the project.
- The current bio-fuel policy of the Government of India, the government has allowed the use of waste grain for production of fuel ethanol and is pushing the use of these feedstock by fixing better prices for ethanol manufactured from these raw materials.