

EXECUTIVE SUMMARY
ENGLISH



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ES 1. Project Description

Ms. Greenery Pure Ethanol Pvt Ltd (GPEPL) promoted by Ms. Greenery Bio Ethanol Pvt Ltd (GBEPL) belonging to Ms. Greenery Group is a private limited company incorporated on June 29, 2022. GBEPL, the holding company for the Ethanol operations of Greenery Group has plans to develop five bio-refineries in different parts of the country under various project specific Special Purpose Vehicles (SPV).

In this regard, M/s Greenery Pure Ethanol Pvt Ltd (GPEPL) has proposed for establishment of 600 KLD Grain based Distillery unit & 13 MW Co-Generation Unit at Sy. No 61, 63/1, 63/2, 64/1, 64/2, 65/1, 65/2, 65/3A, 65/3B, 68/1A1, 68/1A2, 68/1B1, 68/1B2, 68/2, 69/1, 69/2, 70/1, 70/2, 72/2 of Kumaramangalam Village, Kulithalai Taluk, Karur District, Tamil Nadu State. The total extent of the project site is 33 Acres 35 Guntas (13.50 Ha) which is in the name of M/s Greenery Pure Ethanol Pvt Ltd (GPEPL).

The proposed project is a grain-based distillery producing ENA/Ethanol along with 13 MW cogeneration Unit. The project activity falls under schedule 5(g) and 1(d) of EIA Notification, 2006 and its amendments and is categorized as 'A' and it is necessary to obtain Environmental Clearance from the Ministry of Environment, Forests & Climate Change (MoEF&CC). The salient features of the project are as follows;

Table ES 1 Salient features of the project

Sl. No	Items	Particulars
1.	Name of the Project	Establishment of 600 KLD Grain based Distillery Unit & 13 MW Co-Generation Unit at Sy. No 61, 63/1, 63/2, 64/1, 64/2, 65/1, 65/2, 65/3A, 65/3B, 68/1A1, 68/1A2, 68/1B1, 68/1B2, 68/2, 69/1, 69/2, 70/1, 70/2, 72/2 of Kumaramangalam Village, Kulithalai Taluk, Karur District, Tamil Nadu State by M/s Greenery Pure Ethanol Pvt Ltd (GPEPL)
2.	Objective of the Project	Establishment of 600 KLD Grain based Distillery unit along with 13 MW Co-Generation Unit
3.	Promoters	Syed Fahad Managing Director M/s Greenery Pure Ethanol Pvt Ltd
4.	Total Investment, Rs.	600 Crores
5.	Project Location	Sy. No 61, 63/1, 63/2, 64/1, 64/2, 65/1, 65/2, 65/3A, 65/3B, 68/1A1, 68/1A2, 68/1B1, 68/1B2, 68/2, 69/1, 69/2, 70/1, 70/2,

Sl. No	Items	Particulars						
		72/2 of Kumaramangalam Village, Kulithalai Taluk, Karur District, Tamil Nadu State						
6.	Category of the Project	Category A - 5(g), 1(d)						
7.	Extend of Land	The total extent of 33 Acres 35 Guntas (13.50 Ha) of vacant land with 127 number of trees which is in the name of M/s Greenergy Pure Ethanol Pvt Ltd (GPEPL)						
8.	Latitude & Longitude	10°54'10.17"N, 78°28'30.85"E						
9.	Manpower	During Construction: 100 No’s During Operation: 450 No’s						
10.	Water Demand and Source	Construction Phase: 20 KLD (Domestic usage : 5 KLD and Construction activities: 15 KLD) of water from Private tankers. Operation Phase: Source: Cauvery River through dug well Request has been submitted to draw 2500 KLD of water from Cauvery River to the Chief Engineer, Water Resources Department, Trichy on 19.09.2024. <table><tr><td colspan="2">Total water requirement: 3700 KLD</td></tr><tr><td>Fresh water</td><td>Recycled water</td></tr><tr><td>2500 KLD</td><td>1200 KLD</td></tr></table>	Total water requirement: 3700 KLD		Fresh water	Recycled water	2500 KLD	1200 KLD
Total water requirement: 3700 KLD								
Fresh water	Recycled water							
2500 KLD	1200 KLD							
11.	Power Supply & Requirement	The proposed grain-based Distillery will have Boiler of capacity 100 TPH with 13 MW of power generation with rice/maize husk & Imported coal as a fuel. Total Power required: During Construction Phase: The required power of 500 kW will be met from DG Sets 2 Nos. X 750 KVA During Operation Phase: 11 MW. The required Power will be met from proposed 13 MW Co-gen Unit & excess power will be selling to power grids. For back-up DG sets of capacity 2 Nos. X 750 KVA are proposed which will be used only during power failure.						
12.	No. of working days	Total number of working days - 330 days						

ES 1.1 Raw material requirement

Table ES 2 Raw material required for the project

Sl. No	Raw Material	Quantity	Unit	Storage	Source	Mode of Transport	Distance
1	Grain – Broken rice	425	TPD	Silos	Local farmers	Truck	50 Km
2	Grain – Maize	525	TPD				
3	Alpha Amylase	1260	kg/day	Drums	Nearby Market		20 Km
4	Amyoglucosidase						
5	Neutrase						
6	Viscozyme						
7	Sodium Hydroxide	12	TPD	MS			
8	Urea	3600	kg/day	Gunny Bags			
9	Dry Yeast	300	kg/day	Poly bags			
10	Antifoaming Agent	2000	l/day	Drums			
11	Sulphuric Acid	700	kg/day	Drums			

ES 1.2 Products & by-products

Table ES 3 Products & by-products generation

Sl. No.	Product	Capacity	Remarks
A. Products			
1	ENA/ Ethanol	600 KLPD	-
2	Co-generation	13 MW	The power generated will be utilized for operation and the excess power will be sold to power grids.
B. By-Products			
3	DDGS	300 TPD	Will be sold as cattle feed/fish feed
4	CO ₂	150 TPD	CO ₂ will be utilized in bottling (50%) and making Dry Ice (50%)

ES 1.3 Criteria for Site Selection

The project site is ideal as it is surrounded by agricultural lands from where the raw materials viz., Maize and rice are easily available. The project site is approachable through an existing village road connecting MDR 1002 – 1.14 km (W), NH-81 (Kulithalai Bypass) – 0.10 km (N), and MDR 658 – 0.61 km (E) through which the raw materials can be easily transported to the project site. Water requirement will be met from River Cauvery which is located at a distance of 0.60 km from the project site.

ES 1.4 Process description

The Process description of Grain based Ethanol production consists Grain Milling, Liquefaction Section, Jet cooking, Liquefaction, Partial Pre-Saccharification Process, Fermentation Section,

Multi Pressure Vacuum Distillation & Dehydration Technology, Evaporation. The detailed process is as follows;

- ❖ Grain-based ethanol production begins with grain milling, where corn or other grains are ground into fine meal to increase surface area for enzymatic action.
- ❖ The meal is then mixed with water in the liquefaction section to form a slurry, and enzymes are added to break down starch.
- ❖ This slurry undergoes jet cooking, where it is heated under pressure with steam to gelatinize the starch, making it more accessible for further enzymatic breakdown.
- ❖ After cooling, additional enzymes continue liquefaction, converting starch into dextrins. In the partial pre-saccharification stage, glucoamylase enzymes begin converting dextrins into glucose, preparing the substrate for fermentation.
- ❖ During fermentation, yeast transforms glucose into ethanol and carbon dioxide over several days.
- ❖ The ethanol is then separated from water and impurities through multi-pressure vacuum distillation, followed by dehydration technology such as molecular sieves to achieve fuel-grade ethanol purity.
- ❖ Finally, evaporation processes concentrate by-products like thin stillage, producing Distillers Dried Grains With Solubles (DDGS), which serve as valuable animal feed alongside the ethanol output.

ES 2. Description of the Environment

In order to assess the baseline environment of the project site & study area, monitoring of various environmental attributes were conducted by EHSCPL during the Post-monsoon season (October, 2024 to December, 2024). In addition to the baseline monitoring, field inspection of study area within 10 Km radius, collection of secondary data and discussion with neighborhood public, officials were done by the study team.

ES 2.1 Land use

Land use land cover of the study area of 329.72 Sq. Km indicate that, area is predominantly covered with crop land (68.33 %) followed by water bodies (11.59 %) and built-up area (10.76%). The project site is surrounded by agricultural lands in the catchment area of Cauvery River.

ES 2.2 Ambient Air Quality

The Average PM_{10} recorded at project site is $48.73 \mu g/m^3$ & in study area the highest value of PM_{10} (Average) is found $57.06 \mu g/m^3$ (A5 – Karuppampatti) & $PM_{2.5}$ were recorded $19.38 \mu g/m^3$ at Project Site (A1) & the highest value of $PM_{2.5}$ (Avg) is recorded in study area i.e., $24.63 \mu g/m^3$ at Karuppampatti (A5). Similarly SO_2 is observed at project site is $9.51 \mu g/m^3$ & in study area it was noticed that $11.72 \mu g/m^3$ at A5 - Karuppampatti (highest value in Average) & NO_2 is noticed $10.56 \mu g/m^3$ at project site & $12.76 \mu g/m^3$ (A5 – Karuppampatti) were recorded in study area (highest value in Average). The CO is found $0.87 mg/m^3$ in Project Site & in study area $1.12 mg/m^3$ at Karuppampatti (highest value in Average).

The most of the values recorded highest at Karuppampatti because it is occupied area which is connected to m Karupampatti – Muthurajapalayam Road due to which there is movement of vehicles. The AAQM results are within the NAAQ standards in the absence of Industrial growth and sources of pollution in the study area. Hence, the AAQM is found to be 'Good' in the study area.

ES 2.3 Ambient Noise Levels

Out of 8 stations, 6 stations at Residential zone, 1 station at Commercial zone & another one is at silent zone. The noise level varies within the range 48.56 dB(A) to 63.06 dB(A) during day time and 38.84 dB(A) to 52.80 dB(A) during night time. Noise monitored results at all the locations were found to be within the CPCB standards.

ES 2.4 Surface water

Surface water sampling was carried out at 7 locations within project site & study area. However, no water sample was collected at Lake near Ayyalur village (SW-8) as the lake was dry during the visit/study period. The results shows that the pH ranges from 7.64 (SW-6) to 8.18 (SW-1), EC- 410 μ S/cm (SW-2) to 755 μ S/cm (SW-7), Total Hardness – 90 mg/L (SW-2) to 150 mg/L (SW-7), Chloride – 36.2 mg/L (SW-2) to 73.91 mg/L (SW-7), DO – 5.1 (SW-4&7) to 5.7 mg/L (SW-3) and total coliform - 31 MPN/100 ml (SW-5) to 63 MPN/100 ml (SW-7). Water quality criteria as per CPCB guidelines shows that, out of 8 samples, 3 samples belongs to class 'B' suitable for Outdoor bathing and 4 samples belongs to class 'D' suitable for propagation of wild life, fisheries.

ES 2.5 Ground water

Ground water sampling was carried out at 8 locations within project site & study area and the results shows that the pH ranges from 7.52 (GW-4) to 7.98 (GW-3), TH varying from 322 (GW-4) to 532 mg/L (GW-8), EC ranging from 1689 μ S/cm (GW-4) to 2554 μ S/cm (GW-6). Similarly, Chloride ranging from 180.02 (GW-2) to 468.11 mg/L (GW-6) and Nitrate content ranging from 1.9 (GW-2) to 37.69 mg/L (GW-5) and Fluoride content of 0.51 (GW-5) to 0.98 mg/L (GW-8) is recorded. Further, all the parameters are found to be well within the permissible limit of IS 10500:2012 Standards.

ES 2.6 Soil

The soil analysis results indicate that the soil texture in all the locations are sandy loam. Sandy loam soils are capable of quickly draining excess water. Organic carbon falls in medium category indicating the setting of cement by adsorbing calcium ions liberated during hydration will be more and thereby favouring construction activities. pH values fall under medium nutrient index which indicates that the soil supports structures. Electrical conductivity values are considered as normal nature of soil supporting construction activities and in the present study, all the samples were observed to be in the normal range. Overall results of soil quality analysis were found to be supportive to construction activities and suitable for greenbelt activities.

ES 2.7 Geology

The Study area and its environs is occupied with Hornblende-Biotite Gneiss / Migmatite of Migmatite Complex belonging to Archaean Age. River alluvium comprising clay, silt and sand is

observed along Cauvery River while Weathering is observed to be minimum ranging in depth from 0.25 m to a maximum of 3.0 m in the well sections.

ES 2.8 Hydrogeology

The project area and its environs are a part of Pediplain with topographic elevation ranging from 1117.9 m MSL near Residual Hill near Ayyarmalai Village (SW of Project Site) to 87.2 m MSL near Perugamani Village (SE of Project site). The drainage is observed to be dendritic to sub-dendritic in nature. Drainage density is denser on the Pediplain area compared to Alluvial plains and the drainage density varies from 0.49 to 0.58 km/km². All the stream courses are ephemeral in nature except higher order stream (Cauvery River).

The buffer zone has good network of canal system under Cauvery LIS projects envisaged by Govt. of Tamil Nadu. The area has a limited network of tanks which have considerable storage capacity but dry due to discharge to the Cauvery River. The project area falls in the Cauvery River Catchment. The flow direction is towards North and east.

ES 2.9 Biological Environment

The proposed Project falls under the Deccan Interior Region. The land use pattern within 10Km radius shows Crop land (68.33 %) and Water body (11.59 %). Notified forest in the 10 Km Radius are Marudur RF, Kulithalai RF, Manatattai RF.

The project site is predominantly a vacant land with a total of 127 trees with *Cocos nucifera* (N=108), *Azadirachta indica* (N=6), *Borassus flabellifer* (N=8) and *Samanea saman* (N=5) in the periphery of the project site which will be retained. The project does not involve any clearance of existing land, vegetation and buildings.

A variant avifaunal species (about 226 birds belonging to 18 species in the study area) were recorded during the studies, due to presence of favorable environment in the study area like Water bodies, Reserve forests, and Agricultural lands. The Plant diversity, vegetation structure and microhabitats support different feeding guilds, temporary refuge and migratory route which result in increased avifaunal diversity in the areas.

No Schedule-I species were recorded during the studies. As per discussion with local people Three-striped Palm Squirrel, Bonnet Macaque mammal species are found in study area.

ES 2.10 Socio-economic studies

A Total of 54 villages (including small hamlets) fall under a 10 Km radius of the proposed project boundary, of which 41 villages belong to Srirangam, Manapparai, Musuri and Tattayyangarpettai taluks of Tiruchirappalli District and 13 villages belong to Kulittalai taluk of Karur District of Tamilnadu State. The total households of 54 villages are 1,01,339 and the total population is 3,77,239 with 1,87,864 male and 1,89,375 female populations. The average household members in the study area villages are 4 persons per household. The industry upon implementation will provide employment opportunities to 450 people belonging to the local region. The industry has earmarked Rs. 6 Crores (1% of the project investment) for implementation of CER activities.

The perceptions of the respondents in surrounding areas are summarized as follows:

- ❖ All the villagers expressed a positive and welcoming attitude towards the project. However, a few of them were confused between the Ethanol Blending Programme and a distillery, as they initially assumed that it was a spirit manufacturing unit.
- ❖ Most of the villagers demanded local employment opportunities, especially in Kumaramangalam, Pettavaithalai and Mettu Marudur villages, as these villages have high literacy levels and well-educated residents.
- ❖ Under CSR/CER activities, villagers requested the development of infrastructure in Government schools and Primary Health Centres, community facilities and other infrastructure development activities for community welfare.
- ❖ Farmers cultivating sugarcane, maize, and rice expressed happiness about the project, as they expect to reduce transportation costs since the industry will be located near their villages. Residents also expect a significant increase in land prices and overall village infrastructure development due to the establishment of the industry.

Overall, the community consultations indicate overall positive acceptance of the proposed project among local residents. Villagers expect benefits such as local employment opportunities, reduced transportation costs for agricultural produce, and improved economic prospects.

Overall, the project is perceived as a potential driver for local socio-economic development, provided that community needs and environmental safeguards are adequately addressed.

ES 3. Anticipated Environmental impacts and mitigation measures

Sl. No	Environmental Attributes	Impacts	Mitigation Measures
A. Construction Phase			
1.	Air Pollution	Increase in Particulate matter due to movement of vehicles and use of DG sets for construction activities.	❖ Regular water sprinkling will be carried out to suppress the dust. ❖ It will be ensured that diesel powered vehicles and construction machinery are properly maintained to minimize the exhaust emissions. ❖ The machinery used for construction purpose will be properly maintained and serviced.
2.	Noise Levels	Increased noise level affects the health of the workforce & tranquility of surrounding.	❖ The noise control measures include provisions of caps for the equipment and regular maintenance of the equipment's ❖ The workers exposed to the high noise area will be provided with PPEs like ear muff/ plugs to the workers. ❖ The high noise zones at site will be demarcated and provided with enclosures & barriers also, those activities will be restricted only for day. ❖ Where ever possible, equipment will be provided with silencers and mufflers
3.	Water quality	Oil spillage and sewage if left logging will percolate & contaminate ground water. Also it will contaminate surface water through run-off and cause a breeding place for vector borne diseases and cause health impacts.	❖ Labour camp and the surrounding area will be maintained clean & tidy by proper drainage system, raw sewage collection tank etc. The DG Sets used as backup power will generate small quantity of used oil & oil soaked cotton waste which will be stored at an identified place, in a leak proof barrel & disposed to TNPCB Authorized vendors as per HWM Rule 2016.

Sl. No	Environmental Attributes	Impacts	Mitigation Measures
			❖ Oil interceptors will be used; also vehicles will be washed at the designated place to control spillage at the site and accidental spillages to be cleaned up promptly. ❖ By segregating the construction area and construction of concrete drains for storm water, contamination will be prevented. ❖ The generated sewage from labour camps will be treated in mobile STP.
4.	Soil	Temporary displacement of soil is envisaged.	❖ Excavated earth shall be stored separately and fully utilized for green belt development. Garland drains shall be constructed to arrest the surface run off and soil erosion. The drains shall be frequently desilted for free flow of water. ❖ Water sprinkling through sprinklers/tankers (Suggested time period: 2 - 3 times/day) ❖ All road drainage structures (ditches, out sloping, culverts, water bars, dips, etc.) will be in place as soon as possible during the construction of the road. Surface water drainage will be provided for sites associated with road construction such as waste areas, borrow areas and rock pits. All drainage water will be filtered through natural vegetation before it enters streams. ❖ Soil binding and fast growing vegetation grass would be grown around the construction site before commencement of construction activity to reduce soil erosion;

Sl. No	Environmental Attributes	Impacts	Mitigation Measures
5.	Ecology and Biodiversity	❖ No tree removal is proposed and all trees will be retained. ❖ Displacement of smaller mammals and avifaunal species temporarily due to noise generation during construction activities. ❖ Construction activities leads to Noise generation affecting faunal and avifaunal behavior activities in the surrounding area including Marudur RF located at a distance of 320 m from the project site. ❖ Dust Deposition on surrounding flora affecting photosynthetic activity. ❖ Improper treatment of sewage generated and solid waste disposal leading to contamination of soil in nearby agricultural lands and water in nearby nalas, irrigation canals and river affecting plant growth and habitat.	❖ Construction activities will be carried out only during day time to avoid disturbance to faunal species. ❖ Further, impact on Marudur RF is minimum as the railway line, irrigation canal and NH-81 passes in between project site and Marudur RF acting like linear barriers. ❖ Frequent watering (3 times a day) on roads should be carried out. ❖ Proper treatment of sewage water generated by labour camps through installation of 10 KLD Mobile STP and provision of separate closed bins away from water bodies for segregation of waste and frequent disposal to local municipal body and TNSPCB authorized recyclers.
6.	Hydrology & geology	Improper management of sewage from labour camps leads to contamination of nearby water bodies including rivers, nalas and irrigation canals. Contamination of river, nalas and nearby irrigation canals leads to high nutrient loads causing eutrophication and altered flow dynamics, causes hydrological cycle	❖ Provision of mobile STP of capacity 10 KLD to treat the sewage generated from labour camps and the treated water will be used for water sprinkling activities at project site to suppress dust. It will be ensured that no sewage will enter river, nalas or irrigation canals.

Sl. No	Environmental Attributes	Impacts	Mitigation Measures
		disruption due to varying evaporation and infiltration rates and leads to reduced yield and soil degradation.	
7.	Traffic Management	Increase in dust due to fast movement of vehicles, also due to rise in dust chances of low visibility may result in accidents	❖ Speed restriction on vehicles <15 KMPH same will be ensured by trained securities. ❖ Vehicular movement will be in a staggered manner. ❖ Periodic sprinkling will be carried out to suppress the dust. ❖ Asphaltting of internal roads within the project site will further minimize the dust emission.
8.	Solid & Hazardous Waste Management	The solid waste generated during construction will be debris, metal scrap, empty paint cans, etc. The municipal solid waste generated from labours colony creates unhygienic conditions in the vicinity and improper storage will generate leachate and in turn this would affect surface water quality.	❖ The solid waste generated during construction will be debris, metal scrap, empty paint cans, etc., this will be segregated – debris will be utilized for levelling of land formation of roads etc., metal scrap will be stored separately & used as raw material, empty cans will be handed over to authorized recyclers. ❖ The municipal solid waste will be segregated into organic & inorganic, & will be handed over to TNPCB approved authorized recyclers.
B. Operation Phase			
1.	Air Pollution	Gaseous and fugitive emissions from Boilers, Process, storage, transportation of raw materials and finished products, DG sets	❖ The efficiency of ESP is 99.80 %. Clean air will be let out from the chimneys are connected to 100 TPH Boiler (RCC Chimney Height 70 m AGL). ❖ Green belt of 4.67 Ha will be developed all along the periphery of the industry to mitigate air/Noise pollution.

Sl. No	Environmental Attributes	Impacts	Mitigation Measures
			❖ All the internal roads will be asphalted to control particulate emissions. ❖ Regular maintenance of air pollution control equipment will be carried out to ensure proper & effective performance.
2.	Noise Levels	Prolonged exposure to high level noise will lead sleep deprivation, fatigue, stress and productivity losses in the workplace	❖ Noise level can be reduced by stopping leakages from various steam lines, compressed air lines and other high pressure equipment. ❖ Noise generating equipment will be provided with proper sound proof enclosures ❖ The workers in the plant premises will be provided with proper PPEs which include ear muff and ear plugs ❖ Green belt will be developed all along the periphery to reduce noise level.
3.	Water quality	Ground water pollution, flooding due to the generation of spent wash, Sewage, Storm water run off	❖ Domestic sewage of 20 KLD generated from working staff rest rooms which will be treated in a STP of capacity 20 KLD and the treated water will be used for water sprinkling activities at project site. ❖ During operational phase, wastewater generation (225 KLD) from the process like Boiler blow down, WTP reject and lab washing will be treated in ETP of capacity 300 KLD and treated water will be utilized for green belt maintenance. ❖ Effluent (1880 KLD) from distillery including spent lees and MEE Condensate will be treated in the Condensate Polishing unit of 2000 KLD and the treated water will be re-utilized for process.

Sl. No	Environmental Attributes	Impacts	Mitigation Measures
			❖ Spent wash (1900 KLD) will be passed through Decanter to separate into Thin slop and Distillers Wet Grains with Solubles (DWGS). The thin slop will be concentrated in MEE after which the Conc. Slop along with DWGS will form wet cake which will be dried to form Distillers Dried Grains with Solubles (DDGS) and will be sold as cattle feed/fish feed. ❖ Storm water network will be implemented to ensure proper run off and rainwater harvesting pond of capacity 47000 KL will be implemented for storage and utilization for process.
4.	Ecology and Biodiversity	❖ Vehicular movements and industrial activities leads to generation of noise affecting faunal and avifaunal behavior in the surrounding area and in Marudur RF. ❖ Air pollutants like SO₂, NO_x, and particulate matter from distillery boilers and fermentation units can directly affect the vegetation in nearby agricultural lands and in Marudur RF by impairing photosynthesis, altering nutrient cycles, and weakening plant defenses, while also harming wildlife through respiratory stress, reduced food availability, and habitat degradation.	❖ Industrial activities are restricted to day time. ❖ APCEs such as ESP & Bag filters will be provided to reduce dust generation. ❖ As per AAQM modelling, the total predicted value with mitigation measure is 45.74 µg/m³ with incremental value of 0.14 µg/m³ at Marudur RF located at a distance of 320 m from the project site. Further, the maximum concentration predicted for PM is 0.86 µg/m³ at a distance of 100 m towards South. Therefore, there is no major impact of air pollution beyond 100m on Marudur RF as it is located at a distance of 320m. ❖ Further, impact on Marudur RF is minimum as the railway line, irrigation canal and NH-81 passes in between project site and Marudur RF acting like linear barriers to mitigate air and noise pollution. ❖ Proper treatment of sewage/effluent generated from the industry through installation of 20 KLD STP, 300

Sl. No	Environmental Attributes	Impacts	Mitigation Measures
		❖ Improper treatment of sewage/effluent generated and solid waste disposal leading to contamination of soil in nearby agricultural lands and water in nearby nalas, irrigation canals and river affecting plant growth and habitat.	KLD ETP and 2000 KLD CPU and provision of separate closed bins away from water bodies for segregation of waste and frequent disposal to local municipal body and TNSPCB authorized recyclers. It will be ensured that no wastewater/waste will enter the nalas, canal and river. ❖ With the development of 34.64 % of green belt in the proposed project, will increase the movement of birds, butterflies, etc.
5.	Solid waste	• Municipal Solid waste • Yeast Sludge • Sludge from CPU • Ash from boiler • DDGS • Used Oil & Oil soaked cotton waste	❖ The collected domestic solid waste will be segregated into organic and inorganic solid waste, and then it will be handed over to local municipality for further treatment. ❖ Yeast sludge of 94 TPD and Sludge from CPU of 100 TPD will be mixed in required proportion and reused as manure. ❖ DDGS of 300 TPD from Grain based Distillery will be used as Cattle feed. ❖ Ash 36 TPD will be used at in-house brick manufacturing units. ❖ Used oil is used as lubricants & oil soaked cotton waste is used for light up/ start-up of for Boiler.
6.	Risk & hazards and Occupational Health & Safety	Health impacts on employees workers and surrounding villagers	❖ Personnel Protection equipment (safety shoes, goggles, respirators/ masks, Aprons etc.) ❖ Maintenance of Occupational Health center and First aid kits ❖ Training to workers of 450 Nos. on firefighting, use of PPE's, emergency preparedness and first aid

Sl. No	Environmental Attributes	Impacts	Mitigation Measures
			❖ Visual signage and posters display to create awareness on health and safety topics ❖ Environment monitoring in the workplace (Indoor air monitoring, Particulate matter, VOCs etc.) ❖ All precautionary methods will be adopted by the company to reduce the risk of exposure of employees to occupational safety and health hazards. ❖ Pre & post medical check-ups will be done of all the employees. Employees will be regularly examined and the medical records will be maintained for each employee. Pulmonary function test and periodical medical check-up shall be done once in every year. The following tests will be conducted for each worker as Occupational health surveillance programme: Lung Function Test, Radiology – X-ray, Pulmonary Function Test, and Audiometric Test. ❖ For the safety of workers, personnel protective appliances like hand gloves, goggles, aprons, ear mufflers, nose mask etc. will be provided. ❖ Proper ventilation system will be provided in the process area.
7.	Hydrology & geology	Depletion of water table, pressure on fresh water due to water demand, improper handling and treatment of sewage and effluent leads to soil & Groundwater contamination along with contamination of water in river, nalas and irrigation canals, improper storm water management.	❖ Since, there is no water extraction from the ground water for the project; the required water demand will be met from Cauvery River which is located at a distance of 0.60 km from the project site. ❖ Conjunctive use of surface and ground water ensures rise in ground water level and improves water quality.

Sl. No	Environmental Attributes	Impacts	Mitigation Measures
			❖ Rain water harvesting plan will be implemented scientifically. Roof run off & surface runoff will be segregated & collected in separate sumps. ❖ Runoff will be collected in 47,000 KL Rainwater harvesting ponds & further used for process. ❖ Carry out trenching all along the boundary of the project site to a depth of 1.5 m and store the storm water in a RWH pond. This water will be reused with primary treatment. The project activity will not let out any process water to the natural water regime.
8.	Socio-economic Environment	Positive impact	❖ Due to proposed project, local people will get permanent jobs ❖ Socio-economic statue of the surrounding people will improve. ❖ The project has very strong positive impact, which is likely to result in the improvement of economic situation of nearby villages. ❖ Small-scale industrial economy is likely to flourish in the surrounding area. The small-scale industrial units are expected to get financial supports from the financial institutions and banks. In this way, an overall development may take place in this area.
9.	Energy Conservation measures	Positive impact due to use of solar energy	❖ The solar panels will be installed in the open spaces (1 acre) available within the project site and in the additional land (0.98 acre) available in the name of industry at Sy. No. 67 of Kumaramangalam Village, Kulithalai Taluk, Karur District which is located at a distance of 34 m from the project site.

ES 4. Environmental Monitoring Programme

The environmental monitoring program will be strictly implemented during construction and operational phases which will cost ₹ 4,20,000/- Lakhs/Annum) during construction phase and ₹ 7,80,000/- Lakhs /Annum) during operational phase. Six monthly compliance reports for the EC conditions will be submitted to Integrated Regional Office, MoEF&CC. Further, the monthly Environmental Monitoring reports will be submitted to the respective Regional office, TNPCB.

ES 5. Additional Studies

Hazard Identification and Risk Analysis is carried out for the various steps involved in the manufacturing of distillery unit at M/s. GPEPL is shown in below table;

Activity	Hazard description	Control measures
Vehicle movements for raw material transportation	Hit hazard by vehicles	Speed limit shall be maintained. Authorized persons with valid driving license shall be allowed to drive. Caution signage's shall be displayed
Milling process	Injury to body parts due to rotating parts of the machine	Provision of machine guarding, trained person deployment
Conveyor operation	Injury to body parts due to contact with moving conveyer belt	Safety guard shall be provided on all moving and rotating parts of the conveyor
	Fall from the height during work on conveyer belt,	Safety belt, deploying trained person
Using silos for grain storage	Explosion in grain handling silos	Providing explosion proof Dust collection system, bonding and grounding of equipment, Practicing good housekeeping
	Damage to Respiratory organs due to dust generation	Dust protection respirator mask, Dust collection and exhaust system
Operation of hammer mill	Injury to body parts due to rotating parts of the machine	Provision of machine guarding, trained person deployment
Sieving machine operation	Noise generation due to shaker	Use of ear muffs
	Respiratory organs damage due to exposure to dust	Use of mask
	Injury to body parts due to nip points	Machine guarding, trained operator deployment

Activity	Hazard description	Control measures
	Fire hazard due to presence of combustible dust	Provision of dust exhaust machine and ensuring good housekeeping practice
Storage of flours in bins	Damage to respiratory organs due to dust generation	Use of personnel protection equipment like facemask.
Mixing starch in large tanks	Fall hazard in tanks	Authorized persons are allowed to carry out maintenance of tank, use of safety belt, safety helmet and fall arrest measures shall be ensured
	Asphyxiation hazard during maintenance	Confined space entry program will be followed. Work permit system with the required safety measures such as checking of atmospheric conditions, deployment of trained person will be followed
Adding chemicals, enzymes for pH adjustment and fermentation	Respiratory illness and allergic reactions due to exposure to enzymes	Respiratory mask will be provided.
	Damage to skin due to use of corrosive chemicals	Safety gloves, goggles, aprons will be used
Fermentation process in fermenter vessel	Explosion due to Exothermic reactions	Proper Ventilation shall be ensured in area, Provision of pressure indicators in the vessels, Use of PPEs, Inspection & regular monitoring, Training to workers on safe procedure of vessel operations shall be provided
Distillation area	Fire hazard due to Uncontrolled ignition source, Column failure, Pipeline failure,	Facility shall be designed considering the Electrical rating for hazardous area. Fire detection. Fire suppression – sprinkler system. Operators present onsite, Control of ignition sources, ability to isolate the feed.
	Explosion hazard due to over pressure	Pressure relief valve shall be provided
	Fire hazard from the release of ethanol vapor from the lines	Preventive maintenance of the pipe line shall be carried out. Leak detection measures shall be carried out periodically.

Activity	Hazard description	Control measures
Handling of receiver tanks to collect distilled spirit	Spillage of distilled spirit	Transferring operation is done under supervision of trained operator Adequate size of receiver tank shall be ensuring the spillages with containment measures in place. Transferring pumps shall be interlocked with receiver tank level. Spill absorbent pads shall be provided.
	Fire hazard	Proper earthing and bonding system shall be done to prevent static electricity build-up. Flameproof electric equipment shall be used in the area Install hydrocarbon sensors as per need to warn in case of leakages.
Boiler operation	Explosion due to exceed in steam pressure and temperature; failure in water level controller	Level/Temperature Indicators are checked and logged regularly for proper functioning. Pressure gauges shall calibrated periodically, Pressure relief valve shall be provided and maintained. Periodical checking & inspection shall be carried out from the competent person.
	Burn injury due to hot water and hot steam pipeline leakage	Periodic inspection of pipeline for leak test, use of personal protection equipment.
	Exposure to warm temperature in boiler area	Heat resistant gloves and protective suits shall be used.
	Fall from height areas stairs and elevated platforms	Handrail provision shall be made to all the stairs and elevated platforms.
	Exposure to noise level	Ear muff shall be provided to the boiler operators
Generator and turbine operation	High noise level	Use of ear plugs
	Fire in transformer yard	Automatic fire suppression system shall be made available, regular inspection, maintenance authorized entry access, sand buckets, and fire extinguishers shall be providing in appropriate place.
	Electric shock and burn hazard	Trained person deployment and electrical safety PPE's will be provided
	Slip, trip and from the height during routine	Safety belt, safety harness will be provided followed by training

Activity	Hazard description	Control measures
	work, maintenance on switch yard	
Use of chemicals in quality testing laboratories and ETP lab	Irritant in case of inhalation Corrosive to skin and eyes on contact	Splash proof goggles, aprons, organic vapor respirator, safety shoes and gloves shall be provided

ES 6. Project Benefits

- ❖ M/s GPEPL continues to recruit skilled, semi-skilled & unskilled workers from the nearby villages for the proposed project which improves socio-economic status of the people of the surroundings. It creates employment opportunities to 450 Nos. directly from the proposed project.
- ❖ The management will continue its support to the local administration and provide other form of assistance for the development of public amenities viz., water distribution, building of school rooms, health centers, Education Programme, Health camps, Agricultural Programme & sponsorships to meritorious students.
- ❖ Green belt will be developed within the plant premises covering a total area of 4.67 Acres (34.64% of the total area).
- ❖ The socio-economic status of the local people will further improve, there by infrastructure facilities like roads, communication systems etc., will improve.
- ❖ The land rates in the area will improve in the nearby areas due to the implementation of the project. This will help in overall improvement of healthcare facilities, educational facilities, infrastructure facilities & socio-economic status of the people in the surrounding area.

ES 7. Environment Management Plan

M/s. GPEPL is responsible for the implantation & responsibility for taking care of Environmental Management Plan. The total cost of the Project is ₹ 600 crores. The capital cost for implementation of EMP is worked out to be ₹ 4500 Lakhs and Recurring cost of EMP is worked out to be ₹ 203 Lakhs/yr.