DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT

Prepared for Conducting Environmental Public Consultation

For

Establishment of 600 KLD Grain Based Distillery Unit and 13 MW Co-generation Unit

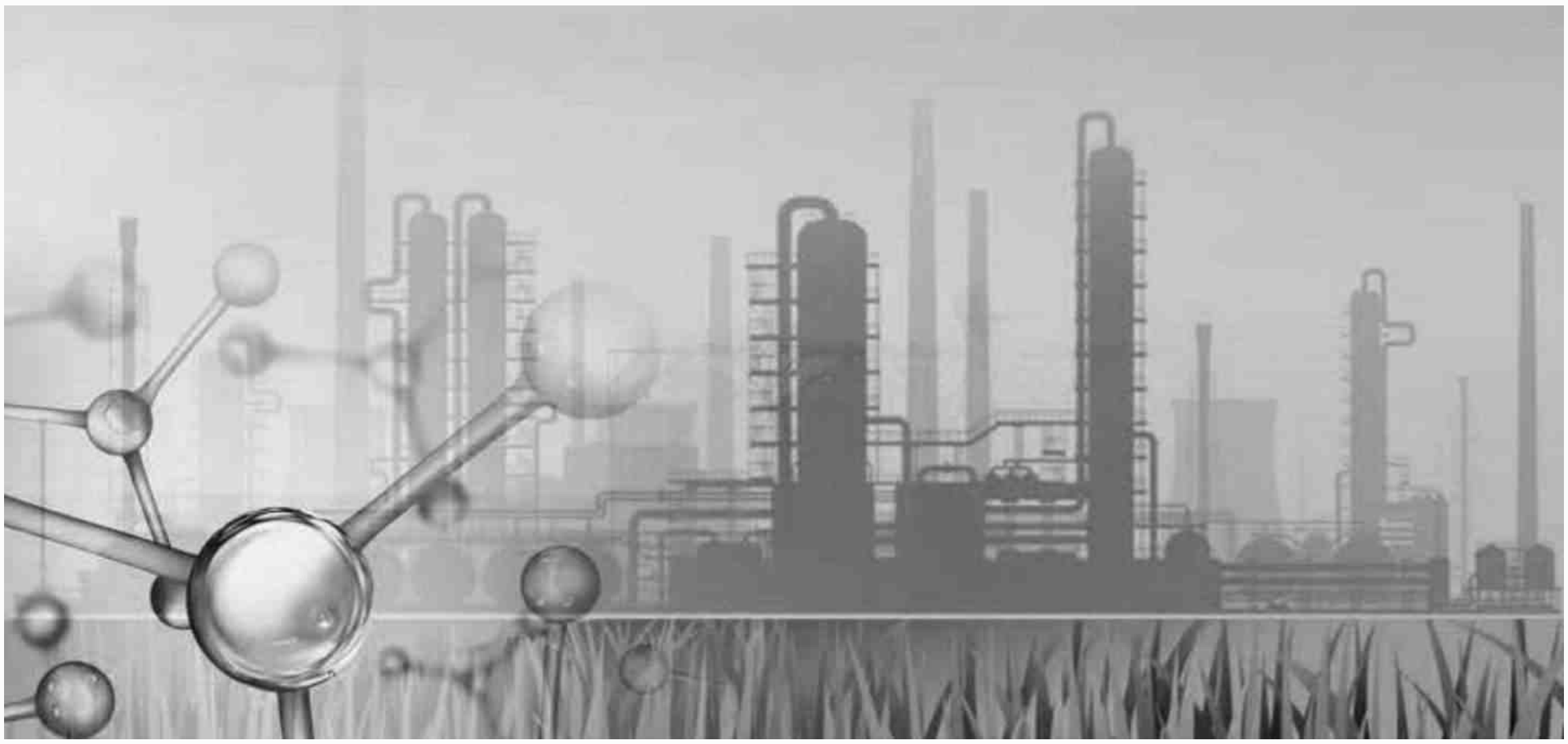
located at

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. GREENERGY PURE ETHANOL PRIVATE LIMITED

No. 319/1, 1st Floor, Golden Point, Queens Road Cross, Thimmaiah Road, Vasant Nagar, Bengaluru-560052



Schedule 5(g) and 1(d) of EIA Notification, 2006 & its subsequent amendments, Category: A, Cost: ₹ 600 Crores, Study Period: October, 2024 to December, 2024

ACCREDITED CONSULTANTS

Environmental Health & Safety Consultants Pvt. Ltd., Bengaluru – 560010
(QCI-NABET accredited)

Certificate No: NABET/EIA/22-25/RA 0268
Dt: 20.02.2026, Valid till 23.08.2027

NABL Accredited
TC-5822

ENVIRONMENTAL LABORATORY

Environmental Health & Safety Research & Development Centre LLP,
Bengaluru – 560010
(MOEF&CC recognized and NABL accredited)

Document No.: EHSCPL/GPEPL/2024-25/D-K

MARCH, 2026

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For the project

Establishment of 600 KLD Grain based Distillery & 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

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MARCH, 2026

Coverage image: https://mopng.gov.in

REVISION RECORD

Rev. No.	Date	Purpose
EHSC/01	14.03.2026	Issued as Draft EIA/EMP Report to client for comments & suggestions
EHSC/02	24.03.2026	Issued as Draft EIA/EMP Report to KSPCB for conducting Environmental Public Consultation
EHSC/03		Issued as Final EIA/EMP Report to client for comments & suggestions
EHSC/04		Issued as Final EIA/EMP Report to MoEF&CC, New Delhi for issue of Environmental Clearance

DOCUMENT CONTROL

Prepared by	Reviewed by	Approved by
Shivanand M. Dambal EIA Coordinator	Prabha S J Manager (Tech)	Dr. T.M. Santhosh Kumar Executive Director

भारतीय गुणवत्ता परिषद्
QUALITY COUNCIL OF INDIA
Creating an Ecosystem for Quality

NABET

National Accreditation Board for Education and Training

Certificate of Accreditation

Environmental Health and Safety Consultants Private Limited, Bangalore

#174/New No.13/2, 14th E Cross, Industrial Town, Agrahara Dasarahalli, Bangalore - 560 044

Environmental Health and Safety Consultants Pvt. Ltd., Bangalore accreditation is continued (SA5) as ***Category-A*** *under the QCI-NABET Scheme for Accreditation of* ***EIA Consultant Organization, Version 3****: for preparing EIA/EMP reports in the following Sectors-*

S.No	Sector Description	Sector (as per)		Cat.
		NABET	MoEFCC	
1	River Valley, Hydel, Drainage and Irrigation projects	3	1 (c)	A
2	Thermal power plants	4	1 (d)	A
3	Mineral beneficiation	7	2 (b)	B
4	Metallurgical industries (ferrous & non-ferrous)	8	3 (a)	A
5	Pesticides industry and pesticide specific intermediates (excluding formulations)	17	5 (b)	A
6	Synthetic organic chemicals industry (dyes & dye intermediates; bulk drugs and intermediates excluding drug formulations; synthetic rubbers; basic organic chemicals, other synthetic organic chemicals and chemical intermediates)	21	5 (f)	A
7	Distilleries	22	5 (g)	A
8	Sugar Industry	25	5 (j)	B
9	Oil & gas transportation pipeline, passing through national parks/ sanctuaries/coral reefs / ecologically sensitive areas including LNG terminal	27	6 (a)	A
10	Industrial estates/ parks/ complexes/ Areas, export processing zones(EPZs), Special economic zones (SEZs), Biotech parks, Leather complexes	31	7 (c)	B
11	Highways	34	7 (f)	A
12	Building and construction projects	38	8 (a)	B
13	Townships and Area development projects	39	8 (b)	B

Note: Names of approved experts and sectors are are mentioned in SAAC minutes dated February 19, 2026, posted on QCI-NABET website.

The Accreditation shall remain in force subject to continued compliance to the terms and conditions mentioned in QCI-NABET's letter of accreditation bearing no. QCI/NABET/ERU/ACO/25/4029 dated February 20, 2025. The accreditation needs to be renewed before the expiry date Environmental Health and Safety Consultants Pvt. Ltd., Bangalore following due process of assessment.

Valid up to
August 23, 2027

Issue Date
February 20, 2026

Certificate No.
NABET/EIA/22-25/SA 0268

Varinder Kanwar

Prof (Dr) Varinder S Kanwar
CEO - NABET

For the updated List of Accredited EIA Consultant Organizations with approved Sectors please refer to QCI-NABET website

DECLARATION

Declaration by EIA Coordinator & Functional Area Experts contributing to preparation of EIA report for project entitled "**Establishment of 600 KLD Grain based Distillery & 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. Greenergy Pure Ethanol Private Limited**"

I, hereby, certify that I was a part of the EIA Team in the following capacity who prepared the EIA report for the above-mentioned project

EIA Coordinator:

Sl.No.	Role	Name	Signature & Date
1	EC	Shri. Shivanand M. Dambal	27/12/24

Period of Involvement: October, 2024 – December, 2024

Contact Information: 080-23016200/ ehscblr@yahoo.com, ehscblr1974@ehsc.in

Sl. No	Functional Area	Name of the Expert	Involvement	Signature & Date
1	Air Pollution Prevention, Monitoring & Control (AP)	Mr. Shivanand M. Dambal, FAE	Involved in collection of baseline weather monitoring data, developing air quality monitoring network as per NAAQ standards, monitoring baseline air quality in the study area, identification of sources of air pollution, identification of anticipated Impacts and providing mitigation measures to control air pollution, establishing EMP in respect of air pollution with cost and time for implementation, preparation of report.	27/12/24
2		Ms. Priyanka Satish Shindhe, FAA	Assistance to FAE in selection of sampling locations, collection of secondary data, collection of Baseline weather monitoring data of the study area.	27/12/2024

Sl. No	Functional Area	Name of the Expert	Involvement	Signature & Date
3	Water Pollution Prevention, Control & Prediction of Impacts (WP)	Mr. Shivanand M. Dambal, FAE	Involved in developing water quality sampling network, sampling of water samples, identification of sources of water pollution, developing water balance chart, identification of anticipated impacts and providing mitigation measures to control water pollution, developing water conservation measures such as rain water harvesting, reuse/recycle of water, establishing EMP in respect of water pollution with cost and time for implementation, preparation of report.	27/12/24
4		Ms. Suhasini, FAE	Assistance to FAE in developing water quality sampling network, discussion with laboratory staff for analysis of water samples, collection of water samples. Collection of Secondary data.	27/12/24
5	Solid Waste and Hazardous Waste Management (SHW)	Mr. Shivanand M. Dambal, FAE	Involved in identification of solid and hazardous waste during construction and operation phase of the project, developing methodologies for quantification, segregation and disposal of SHW, quantification of excavated soil, reuse of excavated soil, recycle and reuse of solid waste, identification of impacts and providing mitigation measures, establishing EMP with cost and time for implementation, preparation of report.	27/12/24
6		Mr. Yashwanth Raj, FAA	Involved in identification of solid and hazardous waste during construction and operation phase of the project, developing methodologies for quantification, segregation and disposal of SHW, quantification of excavated soil, reuse of excavated soil, recycle and reuse of solid waste, identification of impacts and providing mitigation measures, establishing EMP with cost and time for implementation, preparation of report.	27/12/24
7	Socio-Economics (SE)	Naresh G, FAE	Involved in collection of baseline socio-economic (SE) data, developing methodologies for collection of SE data through questionnaires and Focal Group Discussions, analysis of SE data, identification of anticipated impacts and providing mitigation measures, identification of social changes arising due to the project, preparation of EMP along with cost & time for implementation of EMP, preparation of report.	27/12/2024
8		Dr. Pramod Kumar G R, TM	Assistance to FAE in collecting baseline socio-economic (SE) data, developing methodologies for collection of SE data through questionnaires and Focal Group Discussions (FGD). Collection of Secondary data.	27/12/24

Sl. No	Functional Area	Name of the Expert	Involvement	Signature & Date
9	Hydrology, Ground Water & Water Conservation (HG)	Shri. Venkat Naresh Kumar, FAE	Involved in analysis of surface hydrological data, ground water table measurement, ground water recharge, estimation of ground water potential, etc, identification of anticipated impacts and providing mitigation measures, preparation of EMP, preparation of report.	E.V.Venkat Kumar 23.12.24
10	Geology (GEO)	Shri. Venkat Naresh Kumar, FAE	Involved in collection of data pertaining to geology, geomorphological analysis, etc, identification of anticipated impacts and providing mitigation measures, preparation of EMP, preparation of report.	E.V.Venkat Kumar 23.12.24
11	Risk Assessment & Hazard Management (RH)	Dr. Sunil C, FAE	Involved in preparation of risk and hazard management, assessment of earthquake, wind speed factors, lightening, flood, fire protection system, emergency preparedness, security, blasting operations, foundation, etc, identification of anticipated impacts and providing mitigation measures, preparation of report.	
12	Soil Conservation (SC)	Mrs. Shrinidhi R., FAE	Involved in collection of baseline soil profile of the study area, designing of soil sampling network, etc, identification of anticipated impacts and providing mitigation measures, preparation of EMP, preparation of report.	17/12/24
13		Ms. Meena H R, FAA	Assistance to FAE in collection of soil samples, identification of anticipated impacts and providing mitigation measures, preparation of EMP, preparation of report.	Meena.H.R 17/12/24
14	Meteorology, Air Quality Modelling & Prediction (AQ)	Ms. Manisha Appannavar, FAE	Involved in collection of baseline weather monitoring data, developing air quality monitoring network as per NAAQ standards, review and evaluation of field monitoring, quantification of pollutants using modelling software's, identification of impacts, providing mitigation measures, preparation of report.	18/12/24
15		Mr. Yashwanth Raj, FAA	Assistance to FAE in selection of monitoring locations, collection of secondary data, involved in preparation of isopleths using AERMOD cloud, air quality modelling collection of baseline data of the study area.	Yashwanth 27/12/24
16	Noise (NV) & Vibration	Dr. T M Santhosh Kumar, FAE	Involved in designing of noise level monitoring network, collection of baseline noise levels of the study area, assessment of noise levels in respect of sensitive receptors, etc, identification of anticipated impacts and providing mitigation measures, preparation of EMP along with cost &	18/12/2024

Sl. No	Functional Area	Name of the Expert	Involvement	Signature & Date
			time for implementation of EMP, preparation of report	
17		Ms. Suhasini, FAE	Assistance to FAE in selection of sampling locations, collection of secondary data, Involved in preparation of isopleths using dhwaniPRO Noise Modelling, collection of Baseline Noise levels of the study area.	27/12/24
18	Land Use (LU)	Dr. Pramod Kumar G R, FAE	Involved in developing Land use land cover and analysis and interpretation of data, identification of anticipated impacts and providing mitigation measures, preparation of report.	24/12/24
19		Mr. Manjunatha KR, TM	Assistance to FAE in ground truth verification, identification of anticipated impacts and providing mitigation measures, preparation of EMP, preparation of report.	17/11/24
20	Ecology and Biodiversity (EB)	Ms. S. J. Prabha, FAE	Involved in collection of baseline flora and fauna data, developing methodologies for collection of flora and fauna data, identification of flora and fauna of the region, conducting surveys for collection of data, analysis of data, identification of anticipated impacts and providing mitigation measures, designing of landscape & greenbelt development plan, preparation of EMP along with cost & time for implementation of EMP, preparation of report.	S.J.Prabha 23/12/24
21		Ms. Meena H R, FAA	Assistance to FAE, Involved in collection of baseline flora and fauna data, identification of flora and fauna of the region, conducting surveys for collection of data, analysis of data.	Meena H R 17/12/24

Details of Environmental Monitoring Laboratory				
Sl. No.	Laboratory	Name	Involvement	Signature & Date
1	Environmental Health and Safety Research and Development Centre LLP, #13/2, 1st Main Road, Near Fire Station, Industrial Town, Rajajinagar, Bangalore – 560010	Mrs. Nethravathi L. Head Laboratory	Environmental Monitoring / sampling, Testing and analysis of air, water, noise and soil.	17/12/24

Declaration by the Head of the accredited consultant organization/authorized person:

I, Shivanand M. Dambal, hereby, confirm that the aforementioned experts prepared the EIA report for the entitled project "**Establishment of 600 KLD Grain based Distillery & 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. Greenergy Pure Ethanol Private Limited**", I also confirm that we shall be fully accountable for any misleading information mentioned in this report. It is also certified that no unethical practice like copy and paste and use of external data / text without proper acknowledgement is done while preparing this report.

Signature and date: 29/12/24

Name: Shri. Shivanand M. Dambal

Designation: Chairman and Managing Director

Name of the EIA Consultant Organization: Environmental Health and Safety Consultants Pvt Ltd, Bangalore

NABET Certificate No. & Issue Date: NABET/EIA/24-27/RA 0351 Dt: 11.11.2024 (valid till 23.08.2027)

EHSC (ISO 9001 : 2015 Certified) ENVIRONMENTAL HEALTH AND SAFETY CONSULTANTS PVT. LTD

NABET

Corporate Office : # 174/New No. 13/2, 14th 'F' Cross, Industrial Town, Agrahara Dasarahalli, Bengaluru - 560 010.
Tel. : 080-23018200 Fax : 080-23012111 E-mail : ehscblr1974@ehsc.in, ehscblr@yahoo.com, ehscblr1974@gmail.com www.ehsc.in

DECLARATION BY CONSULTANT

Sub: Declaration of consultancy and ownership of EIA/EMP report of **"Establishment of 600 KLD Grain based Distillery & 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. Greenergy Pure Ethanol Private Limited"**

*****

In accordance with Ministry of Environment, Forests and Climate Change, New Delhi OM No. J-11013/41/2006-IA.II (I) dated 04.08.2009, M/s Environmental Health and Safety Consultant Pvt Ltd Bangalore, hereby certify that the EIA/EMP report of "Establishment of 600 KLD Grain based Distillery & 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. Greenergy Pure Ethanol Private Limited" is prepared based on the Generic structure given in EIA notification dated 14th September, 2006.

The contents of this EIA/EMP report are prepared based on the technical information provided by the project proponent. The data submitted in this report is factually correct to the best of our knowledge. Any typographical errors in this report shall be brought to the notice of EHSCPL for further rectification.

Thanking You

Yours faithfully,

For M/s Environmental Health & Safety
Consultants Pvt. Ltd., Bengaluru

Shivanand M. Dambal
(Chairman & Managing Director)

Branch Office : #13/2, 1st Main Road, Near Fire Station, Industrial Town, Rajajinagar, Bengaluru - 560 010.
Tel : 080 - 23012100 Fax : 080 - 23012111

GREENERGY PURE ETHANOL PRIVATE LIMITED

Regd. Off: No.324, Golden Point 4, Off. Queens Road Cross, Vasant Nagar, Bengaluru 560052, KA, IN
Ph: 080- 49222220 // **Email:** tngpepl@gmail.com // **GST:** 29AAJCG8851F1Z6

Date:

UNDERTAKING

Sub: Establishment of 600 KLD Grain based Distillery to & 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. Greenergy Pure Ethanol Private Limited

Ref: ToRs granted by MoEF&CC vide File No.: IA-J-11011/46/2026-IA-II dated: 16.02.2026

*****

The EIA/EMP report prepared for the project is in line with the above-mentioned ToR and has been complied with the ToR. The contents (details/information) submitted in the report is factually correct to the best of our knowledge. It is hereby undertaken that, there are no court case/show cause pending against the project from any of the regulatory authorities and is free from litigation. Further, it is hereby declared that, no work has been started at project site and there is no violation of provisions mentioned in the EIA Notification, 2006 and its subsequent amendments.

Your's faithfully,
For M/s. Greenergy Pure Ethanol Private Limited

(Syed Ahmad)
Managing Director

Greenergy Pure Ethanol Pvt. Ltd. Bengaluru

Regd. Off: No.324, Golden Point 4, Off. Queens Road Cross, Vasant Nagar, Bengaluru 560052, KA, IN

ABBREVIATIONS

AAQM	Ambient Air Quality Monitoring
APCE	Air Pollution Control Equipment
AQI	Air quality Index
BOD	Biochemical Oxygen Demand
CGWA	Central Ground Water Board
COD	Chemical Oxygen Demand
CPCB	Central Pollution Control Board
CPU	Condensate Polishing Unit
CREP	Corporate Responsibility for Environmental Protection.
CSR	Corporate Social Responsibility
CTE	Consent To Establish
CTO	Consent To Operate
DCS	Distributed Control System
DDGS	Distillers Dried Grains with Solubles
DG	Diesel Generator
DMP	Disaster Management Plan
DO	Dissolved Oxygen
DWGS	Distillers Wet Grains with Solubles
EC	Environmental Clearance
EHSC	Environmental Health & Safety Consultants
EHSRDC LLP	Environmental Health & Safety Research & Development Center LLP
EIA	Environmental Impact Assessment
EMC	Environmental Management Cell
EMoP	Environmental Monitoring Plan
EMP	Environmental Management Plan
EPH	Environmental Public Hearing
GIS	Geographic Information System
GLC	Ground Level Concentration
GPEPL	Greenergy Pure Ethanol Pvt Ltd
GPS	Global Positioning System
GSI	Geological Survey of India
HSD	High Speed Diesel
HSE	Health, Safety and Environment
IUCN	International Union For Conservation of Nature
KW	Kilo Watt
MEE	Multi Effect Evaporator
MoEF&CC	Ministry of Environment Forest & Climate Change
MSDS	Material Safety Data Sheet
MSIHC	Manufacturing, Storage and Identification of Hazardous Chemicals
MT	Metric Tons
MVA	Mega Volt Ampere
MW/Hr	Mega Watt per Hour
NAAQM	National Ambient Air Quality Monitoring
NABL	National Accreditation Board for Testing and Calibration Laboratories

NBSS & LUP	National Bureau of Soil Survey and Land Use Planning
NRSC	National Remote Sensing Centre
O&M	Operation and Maintenance
OHS	Occupational Health and Safety
PAH	Polynuclear Aromatic Hydrocarbons
PPE	Personal Protection Equipment
PPM	Parts Per Million
PVC	Polyvinyl Chloride
RCC	Reinforced Cement Concrete
RO	Reverse osmosis
SAR	Sodium Absorption Ratio
SOI	Survey of India
SOP	Standard Operating Procedure
SPM	Suspended Particulate Matter
SPV	Special Purpose Vehicles
TCD	Tons of Cane Crushing Per Day
TCH	Tons Cane per Hours
TG	Turbo Generator
TNPCB	Tamil Nadu Pollution Control Board
TPD	Tons Per Day
TPH	Tons Per Hour
TSS	Total Suspended Solids
WTP	Water Treatment Plant
ZLD	Zero Liquid Discharge

COMPLIANCE TO TERMS OF REFERENCES (ToRs)

<table>
<tr><th>Sl. No.</th><th>TORs</th><th>Compliance to TOR</th></tr>
<tr><td colspan="3">5(g): STANDARD TERMS OF REFERENCE FOR CONDUCTING ENVIRONMENT IMPACT ASSESSMENT STUDY FOR DISTILLERIES AND INFORMATION TO BE INCLUDED IN EIA/EMP REPORT.</td></tr>
<tr><td colspan="3">A. STANDARD TERMS OF REFERENCE</td></tr>
<tr><td>1</td><td>Executive summary</td><td></td></tr>
<tr><td>1.1</td><td>Executive summary</td><td>Compiled, Page No. 1</td></tr>
<tr><td>2</td><td>Introduction</td><td></td></tr>
<tr><td>2.1</td><td>Details of the EIA Consultant including NABET accreditation</td><td>M/s. Environmental Health and Safety Consultants Pvt. Ltd., Bangalore
NABET Accreditation No. NABET/EIA/24-27/RA 0351, Dated: 11/11/2024 valid till 23/08/2027</td></tr>
<tr><td>2.2</td><td>Information about the project proponent</td><td>Syed Fahad
Managing Director
M/s. Greenergy Pure Ethanol Private Limited
No. 319/1, 1st Floor, Golden Point, Queens Road Cross, Thimmaiah Road, Vasant Nagar, Bengaluru-560052</td></tr>
<tr><td>3</td><td>Project description</td><td></td></tr>
<tr><td>3.1</td><td>Cost of project and time of completion</td><td>The total cost of the proposed expansion project is Rs. 600 Crores and the estimated time required for completion is 12 months after obtaining the EC from MoEF&CC.</td></tr>
<tr><td>3.2</td><td>Products with capacities for the proposed project</td><td>
<table>
<tr><th>Sl. No.</th><th>Product</th><th>Capacity</th><th>Remarks</th></tr>
<tr><td colspan="4">A. Products</td></tr>
<tr><td>1</td><td>Ethanol</td><td>600 KLPD</td><td>-</td></tr>
<tr><td>2</td><td>Co-generation</td><td>13 MW</td><td>The power generated will be utilized for operation and the excess power will be sold to power grids.</td></tr>
<tr><td colspan="4">B. By-Products</td></tr>
<tr><td>3</td><td>DDGS</td><td>300 TPD</td><td>Will be sold as cattle feed/fish feed</td></tr>
<tr><td>4</td><td>CO_2</td><td>150 TPD</td><td>CO_2 will be utilized in bottling (50%) and making Dry Ice (50%)</td></tr>
</table>
</td></tr>
<tr><td>3.3</td><td>List of raw materials required and their source along with mode of transportation.</td><td rowspan="2">The details of raw materials & chemicals requirement is given in section 2.4.2 and ethanol is stored in storage tanks of capacity 13200 ltrs (3300 KL X 4 nos).</td></tr>
<tr><td>3.4</td><td>Other chemicals and materials required with quantities and storage capacities</td></tr>
</table>

Sl. No.	TORs	Compliance to TOR
3.5	Details of Emission, effluents, hazardous waste generation and their management.	Details of emission are provided in Section 2.9.1 of Chapter 2, effluents are provided in Section 2.9.4 of Chapter 2 and waste generation and its management are provided in Section 4.7 of Chapter 4.
3.6	Process description along with major equipment's and machineries, process flow sheet (quantitative) from raw material to products to be provided	Process description and process flow sheet is provided in Section 2.6 of Chapter 2, list of machineries/equipment are provided in Section 2.4.4 of Chapter 2 and Annexure 11 of EIA report.
3.7	Hazard identification and details of proposed safety systems.	Hazard identification and details of proposed safety systems are provided in Chapter 7 of EIA report.
4	**Site Details**	
4.1	Location of the project site covering village, Taluka/Tehsil, District and State, Justification for selecting the site, whether other sites were considered	Location of the project site covering village, Taluka/Tehsil, District and State is provided in Section 2.3 of Chapter 2 and justification for selecting the site and details of alternative sites are provided in Section 5.3 of Chapter 5.
4.2	A toposheet of the study area of radius of 10km and site location on 1:50,000/1:25,000 scale on an A3/A2 sheet. (including all eco-sensitive areas and environmentally sensitive places)	A toposheet of the study area of radius of 10km and site location on 1:50,000/1:25,000 scale is enclosed as Annexure 2 of EIA report.
4.3	Co-ordinates (lat-long) of all four corners of the site. Google map-Earth downloaded of the project site. Layout maps indicating existing unit as well as proposed unit indicating storage area, plant area, greenbelt area, utilities etc. If located within an Industrial area/Estate/Complex, layout of Industrial Area indicating location of unit within the Industrial area/Estate.	Co-ordinates (lat-long) of all four corners of the site is indicated in Fig 2.1 of Section 2.3 of Chapter 2. Google map-Earth downloaded of the project site is indicated in Fig 2.4 of Section 2.3 of Chapter 2. Layout maps indicating existing unit as well as proposed unit indicating storage area, plant area, greenbelt area, utilities etc. is provided as Annexure -2 of EIA report.
4.4	Photographs of the proposed and existing (if applicable) plant site. If existing, show photographs of plantation/greenbelt, in particular.	Project site photographs are provided in Fig 2.5 of Section 2.3 of Chapter 2 of EIA report.
4.5	Land use break-up of total land of the project site (identified and acquired), government/private - agricultural, forest, wasteland, water bodies, settlements, etc. shall be included. (not required for industrial area)	Land use break of total land of the project site is provided in Table 2.3 of Section 2.3.5 of Chapter of EIA report.
4.6	A list of major industries with name and type within study area (10 Km radius) shall be incorporated.	List of major industries with name and type within study area (10 Km radius) is provided in Table 3.29 of Section 3.11.4.5 of Chapter 3 of EIA report.

Sl. No.	TORs	Compliance to TOR
4.7	Details of Drainage of the project up to 5km radius of study area. If the site is within 1 km radius of any major river, peak and lean season river discharge as well as flood occurrence frequency based on peak rainfall data of the past 30 years. Details of Flood Level of the project site and maximum Flood Level of the river shall also be provided.	Details of drainage along with drainage map and flood details and water level details from nearest flood forecast station is provided in Section 3.9.4.6 of Chapter 3.
4.8	Status of acquisition of land. If acquisition is not complete, stage of the acquisition process and expected time of complete possession of the land.	The entire land of 13.5 Ha is in the name of the industry and no land acquisition is involved in the current project.
4.9	R&R details in respect of land in line with state Government policy.	No R&R is involved in this project
5	**Forest and Wildlife related issues (if applicable)**	
5.1	Permission and approval for the use of forest land (forestry clearance), if any, and recommendations of the State Forest Department. (if applicable).	There is no forest land involved in this project. Hence Permission and approval from forest department is not applicable.
5.2	Land use map based on High resolution satellite imagery (GPS) of the proposed site delineating the forestland (in case of projects involving forest land more than 40 ha).	There is no forest land involved in this project.
5.3	Status of Application submitted for obtaining the stage I forestry clearance along with latest status shall be submitted.	Not Applicable.
5.4	The projects to be located within 10 km of the National Parks, Sanctuaries, Biosphere Reserves, Migratory Corridors of Wild Animals, the project proponent shall submit the map duly authenticated by Chief Wildlife Warden showing these features vis-à-vis the project location and the recommendations or comments of the Chief Wildlife Warden-thereon.	There are no notified National Parks, Sanctuaries, Biosphere Reserves, Migratory Corridors of Wild Animals within 10 km radius of the project site.
5.5	Wildlife Conservation Plan duly authenticated by the Chief Wildlife Warden of the State Government for conservation of Schedule I fauna, if any exists in the study area.	No schedule I species are recorded during the study period and hence Wildlife Conservation Plan duly authenticated by the Chief Wildlife Warden of the State Government for conservation of Schedule I is not applicable.

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5.6	Copy of application submitted for clearance under the Wildlife (Protection) Act, 1972, to the Standing Committee of the National Board for Wildlife	Not applicable.
6	**Environmental Status**	
6.1	Determination of atmospheric inversion level at the project site and site-specific micro-meteorological data using temperature, relative humidity, hourly wind speed and direction and rainfall.	Details of atmospheric inversion level at the project site and site-specific micro-meteorological data using temperature, relative humidity, hourly wind speed and direction and rainfall in Section 3.5 of Chapter 3 of EIA report.
6.2	AAQ data (except monsoon) at 8 locations for PM10, PM 2.5, SO2, NOX, CO and other parameters relevant to the project shall be collected. The monitoring stations shall be based CPCB guidelines and take into account the pre-dominant wind direction, population zone and sensitive receptors including reserved forests.	AAQ data (except monsoon) at 8 locations for PM10, PM 2.5, SO2, NOX, CO and other parameters relevant to the project has been provided in Section 3.6 of Chapter 3. The monitoring stations has been selected based on CPCB guidelines and taken into account the pre-dominant wind direction, population zone and sensitive receptors including reserved forests.
6.3	Raw data of all AAQ measurement for 12 weeks of all stations as per frequency given in the NAQQM Notification of Nov. 2009 along with – min., max., average and 98% values for each of the AAQ parameters from data of all AAQ stations should be provided as an annexure to the EIA Report.	Raw data of all AAQ measurement for 12 weeks of all stations as per frequency given in the NAQQM Notification of Nov. 2009 along with – min., max., average and 98% values for each of the AAQ parameters from data of all AAQ stations has been provided as Annexure-13 of EIA report.
6.4	Surface water quality of nearby River (100m upstream and downstream of discharge point) and other surface drains at eight locations as per CPCB/MoEF&CC guidelines.	Surface water sampling has been carried out 7 locations since no water sample was collected at Lake near Ayynur village (SW-8) as the lake was dry during the visit/study period. The details are provided in Section 3.8 of Chapter 3.
6.5	Whether the site falls near to polluted stretch of river identified by the CPCB/MoEF & CC, if yes give details.	As per Polluted River Stretches for Restoration of Water Quality (2025) issued by CPCB, MoEF&CC, the stretch of River Cauvery at Erode near Virapalayam to Pitchavaram fall under priority Class III (BOD ranging from 10-20 mg/L). The proposed project site is located along the River Cauvery (600 m from project site) stretch between Musiri and Pettavaithalai wherein the BOD values are 2.4 mg/L and 2.6 mg/L respectively as observed during 2024. Details are provided in Section 3.8.2.1 of Chapter 3.

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6.6	Ground water monitoring at minimum at 8 locations shall be included.	Ground water sampling has been carried out 8 locations. The details are provided in Section 3.8 of Chapter 3.
6.7	Noise levels monitoring at 8 locations within the study area.	Noise level monitoring has been carried out 8 locations. The details are provided in Section 3.7 of Chapter 3.
6.8	Soil Characteristic as per CPCB guidelines.	Soil characteristics are provided in Section 3.4 of Chapter 3.
6.9	Traffic study of the area, type of vehicles, frequency of vehicles for transportation of materials, additional traffic due to proposed project, parking arrangement etc. Impact due to increased traffic shall be assessed and incorporated in environmental management plan. Buffer zone of 50.0 m from centre of state highway shall be maintained	Noted and requisite traffic management plan will be implemented as stated in Section 10.7 of Chapter 10.
6.10	Detailed description of flora and fauna (terrestrial and aquatic) existing in the study area shall be given with special reference to rare, endemic and endangered species. If Schedule-I fauna are found within the study area, a Wildlife Conservation Plan shall be prepared and furnished.	Detailed description of flora and fauna (terrestrial and aquatic) existing in the study area along with rare, endemic and endangered species are provided in Section 3.10 of Chapter 3. No schedule I species were recorded during the study period.
6.11	Socio-economic status of the study area.	Socio-economic status of the study area provided in Section 3.11 of Chapter 3.
7	**Impact and Environment Management Plan**	
7.1	Assessment of ground level concentration of pollutants from the stack emission based on site-specific meteorological features. In case the project is located on a hilly terrain, the AQIP Modelling shall be done using inputs of the specific terrain characteristics for determining the potential impacts of the project on the AAQ. Cumulative impact of all sources of emissions (including transportation) on the AAQ of the area shall be assessed. Details of the model used and the input data used for modelling shall also be provided. The air quality contours shall be plotted on a location map showing the location of	The ground level concentration of pollutants from the stack emission based on site-specific meteorological features for the proposed project is evaluated by using AERMOD model & the details are given in section 4.4 of Chapter 4.

Sl. No.	TORs	Compliance to TOR
	project site, habitation nearby, sensitive receptors, if any.	
7.2	Water Quality modelling – in case, of discharge in water body.	Provision of STP, ETP and CPU has been made within the project site to treat sewage and effluent generated from the industry and the treated water will be reutilized for the process, water sprinkling and greenbelt development. Therefore, there will be no effluent discharge outside of the project as the plant will designed with zero liquid discharge (ZLD) system. The details are provided in Section 2.9.4 of Chapter 2.
7.3	Impact of the transport of the raw materials and end products on the surrounding environment shall be assessed and provided. In this regard, options for transport of raw materials and finished products and wastes (large quantities) by rail or rail-cum road transport or conveyor-cum-rail transport shall be examined.	Impact of the transport of the raw materials and end products on the surrounding environment has been assessed and provided in Section 4.4.1.4 of Chapter 4.
7.4	A note on treatment of wastewater from different plant operations, extent recycled and reused for different purposes shall be included. Complete scheme of effluent treatment. Characteristics of untreated and treated effluent to meet the prescribed standards of discharge under E (P) Rules.	The details are provided in Section 2.9.4 of Chapter 2. Characteristics of effluent are provided in (Table 2.18 and 2.19) Section 2.9 of Chapter 2.
7.5	Details of stack emission and action plan for control of emissions to meet standards.	Details of stack emission and action plan for control of emissions to meet standards are provided in Section 2.4.7 and 2.9.1 of Chapter 2.
7.6	Measures for fugitive emission control	Measures for fugitive emission control are provided in Section 2.9.1.1 of Chapter 2.
7.7	Details of hazardous waste generation and their storage, utilization and management. Copies of MOU regarding utilization of solid and hazardous waste in cement plant shall also be included. EMP shall include the concept of waste-minimization, recycle / reuse / recover techniques, Energy conservation, and natural resource conservation.	Details of hazardous waste generation and their storage, utilization and management are provided in Section 4.3 of Chapter 3. Energy conservation measures and natural resource conservation are provided in Section 5.3 and 5.2 respectively.
7.8	Proper utilization of fly ash shall be ensured as per Fly Ash Notification,	Boiler ash 36 TPD will be used to manufacture bricks at inhouse brick manufacturing unit.

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	2009. A detailed plan of action shall be provided.	
7.9	Action plan for the green belt development plan as per IA3-22/14/2025-IA.III dated 29.10.2025 with not less than 2,500 trees per ha. mentioning details of species, width of plantation, planning schedule, density of the plantation etc. shall be included. At least 20 varieties of species shall be proposed as part of greenbelt. No invasive or alien or non-native tree species shall be selected for plantation. The green belt shall be around the project periphery and a scheme for greening of the roads used for the project shall also be incorporated.	Green belt will be developed in 4.67 Ha contributing to 34.64% of the project site with around 11,348 saplings all along the periphery of the project site and all along internal roads and nala buffers. Details are provided in Section 10.6 of Chapter 10.
7.10	Action plan for rainwater harvesting measures at plant site shall be submitted to harvest rainwater from the roof tops and storm water drains to recharge the ground water and also to use for the various activities at the project site to conserve fresh water and reduce the water requirement from other sources. Industry shall construct a rain water storage pond and the accumulated water to be used as fresh water thereby reducing fresh water consumption. Dimensions of rain water storage pond/tank proposed shall be given.	The total runoff available from project site is 46,569 m3/Annum, which will be collected in 1*30000KL (100X60X5) and 1*17000KL (100X34X5) surface ponds and collected rainwater will be utilized for process/secondary purposes in the industry. Details are provided in Section 10.4 of Chapter 10.
8	**Occupational Health**	
8.1	Plan and fund allocation to ensure the occupational health & safety of all contract and casual workers.	Details of plan and fund allocation to ensure the occupational health & safety of all workers are provided in Section 7.16 and 10.8 of Chapters 7 and 10 respectively.
8.2	Details of exposure specific health status evaluation of worker. If the workers' health is being evaluated by pre designed format, chest x rays, Audiometry, Spirometry, Vision testing (Far & Near vision, colour vision and any other ocular defect)	The project is a greenfield project and hence, it will be ensured that the requisite guidelines pertaining to occupational health and safety aspects including frequent health evaluation, exposure levels of hazards along with annual health reports will be documented and submitted during implementation of the project.

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	ECG, during pre-placement and periodical examinations give the details of the same. Details regarding last month analyzed data of above mentioned parameters as per age, sex, duration of exposure and department wise.	
8.3	Details of existing Occupational & Safety Hazards. What are the exposure levels of above mentioned hazards and whether they are within Permissible Exposure level (PEL). If these are not within PEL, what measures the company has adopted to keep them within PEL so that health of the workers can be preserved.	
8.4	Annual report of health status of workers with special reference to Occupational Health and Safety.	
9	**Corporate Environmental Policy**	
9.1	Does the company have a well laid down Environment Policy approved by its Board of Directors? If so, it may be detailed in the EIA report.	The details of the environment policy if the industry is enclosed in Section 10.2 of Chapter 10.
9.2	What is the hierarchical system or Administrative order of the company to deal with the environmental issues and for ensuring compliance with the environmental clearance conditions? Details of this system may be given.	The details of the structure of Environmental Management Cell showing hierarchical system or Administrative order of the company to deal with the environmental issues and for ensuring compliance with the environmental clearance conditions is provided in Section 10.2 of Chapter 10.
9.3	Does the company have system of reporting of non compliances / violations of environmental norms to the Board of Directors of the company and / or shareholders or stakeholders at large? This reporting mechanism shall be detailed in the EIA report.	
10	**Details regarding infrastructure facilities such as sanitation, fuel, restroom etc. to be provided to the labour force during construction as well as to the casual workers including truck drivers during operation phase**	During construction phase. Provision of 10 KLD mobile STP has been made and during operation phase, provision of sufficient restrooms/toilet facilities have been made at project site along with provision of 20 KLD STP to treat generated sewage.
11	**Enterprise Social Commitment (ESC)**	

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11.1	As per Ministry's OM No. 22-65/2017-IA.III dated 30.09.2020 PP shall address Public Hearing issues and submit item-wise details along with time bound action plan which shall be included in the Environmental Management Plan in lieu of Corporate Environment Responsibility. Socio-economic development activities need to be elaborated upon	The Corporate Environmental Responsibility Plan is worked out as per MoEF & CC Notification vide No. F.No.22 -65/2017-IA.III dated on 1.05.2018, the total CER cost of the project is 6.00 Crores @ 1 % of the total investment of the project (600 Crores).
11.2	Any litigation pending against the project and/or any direction/order passed by any Court of Law against the project, if so, details thereof shall also be included. Has the unit received any notice under the Section 5 of Environment (Protection) Act, 1986 or relevant Sections of Air and Water Acts? If so, details thereof and compliance/ATR to the notice(s) and present status of the case.	There are no litigation pending against the industry.
11.3	A tabular chart with index for point wise compliance of above TOR.	Compliance to ToRs in tabular form is provided at the beginning of the EIA report.
12. Specific Conditions		
12.1	List of existing distillery units in the study area along with their capacity and sourcing of raw material.	There are no existing distillery units in the study area.
12.2	Number of working days of the distillery unit.	The distillery unit will be in operation for 330 days in a year.
12.3	Details of raw materials such as molasses/grains, their source with availability.	Details of raw materials along with source/availability is provided in Section 2.4.2 of Chapter 2.
12.4	Details of the use of steam from boiler.	Steam requirement details are provided in Section 2.4.6 of Chapter 2.
12.5	Surface and Ground water quality around proposed spent wash storage lagoon and compost yard.	The groundwater quality will be assessed regularly during operational phase of the project near spent wash storage area and compost yard.
12.6	Plan to reduce spent wash generation within 6-8 KL/KL of alcohol produced.	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. 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

Sl. No.	TORs	Compliance to TOR
		form wet cake which will be dried to form Distillers Dried Grains with Solubles (DDGS) and will be sold as cattle feed/fish feed
12.7	Proposed effluent treatment system for molasses/grain based distillery (spent wash, spent less, condensate and utilities) as well as domestic sewage and scheme for achieving zero effluent discharge (ZLD)	The details of effluent treatment system for grain-based distillery (spent wash, spent less, condensate and utilities) as well as domestic sewage and scheme for achieving zero effluent discharge (ZLD) are provided in Section 2.9.4 of Chapter 2.
12.8	Proposed action to restrict fresh water consumption within 10 KL/KL of alcohol production.	Fresh water consumption is restricted to 4KL/KL of alcohol production as it is a grain based distillery.
12.9	Details about capacity of spent wash holding tank, material used, design consideration. No. of piezometers to ne proposed around spent wash holding tank.	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
12.10	Details of solid waste management including management of boiler ash, yeast, etc. Details of incinerated spent wash ash generation and disposal	Details of solid waste generation and their storage, utilization and management are provided in Section 4.3 of Chapter 3.
12.11	Details of bio-composting yard (if applicable).	Not applicable.
12.12	Action plan to control odour pollution.	Action plan to control odour pollution is provided in Section 2.9.2 of Chapter 2.
12.13	Arrangement for installation of continuous online monitoring system (24 x 7 monitoring device).	It will be ensured that continuous online monitoring system will be installed during operation phase.
12.14	If Sugar and distillery will have integrated effluent treatment facilities. Details regarding the same.	The proposed project is a standalone grain based distillery and the details of effluent treatment are provided in Section 2.9.4 of Chapter 2.
Standard Terms of Reference for conducting Environment Impact Assessment Study for Thermal Power Plants and information to be included in EIA/EMP report		
1	**Statutory Compliances**	
1.1	The proposed project shall be given a unique name in consonance with the name submitted to other Government Departments etc. for its better identification and reference	Not Applicable
1.2	Vision document specifying prospective long term plan of the project shall be formulated and submitted.	Not Applicable

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1.3	Latest compliance report duly certified by the Regional Office of MoEF&CC for the conditions stipulated in the environmental and CRZ clearances of the previous phase(s) for the expansion projects shall be submitted	Not Applicable
2	**Details of the Project Site**	
2.1	The project proponent needs to identify minimum three potential sites based on environmental, ecological and economic considerations, and choose one appropriate site having minimum impacts on ecology and environment. A detailed comparison of the sites in this regard shall be submitted	Not Applicable
2.2	Executive summary of the project indicating relevant details along with recent photographs of the proposed site (s) shall be provided. Response to the issues raised during Public Hearing and the written representations (if any), along with a time bound Action Plan and budgetary allocations to address the same, shall be provided in a tabular form, against each action proposed.	The executive summary of the project is given section Executive Summary, Page No. 1 and details related to Public Hearing will be provided after completion of Environmental Public Hearing (EPH).
2.3	Harnessing solar power within the premises of the plant particularly at available roof tops and other available areas shall be formulated and for expansion projects, status of implementation shall also be submitted.	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. Details are provided in Section 5.3 of Chapter 5.
2.4	The geographical coordinates (WGS 84) of the proposed site (plant boundary), including location of ash pond along with topo sheet (1:50,000 scale) and IRS satellite map of the area, shall be submitted. Elevation of plant site and ash pond with respect to HFL of water body/nallah/River and high tide level from the sea shall be	A toposheet of the study area (10 Km radius) showing project site and all eco-sensitive areas and environmentally sensitive places are shown in Fig 2.3 and Fig 2.4 and Annexure 2.

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	specified, if the site is located in proximity to them	
2.5	Layout plan indicating break-up of plant area, ash pond, green belt, infrastructure, roads etc. shall be provided.	The layout plan of project indicating all the units with area statement and other utilities, etc., is given in Annexure – 2.
2.6	Land requirement for the project shall be optimized and in any case not more than what has been specified by CEA from time to time. Item wise break up of land requirement shall be provided.	Land use break and plant area statement is provided in Section 2.3.5 of Chapter 2.
2.7	Present land use (including land class/kism) as per the revenue records and State Govt. records of the proposed site shall be furnished. Information on land to be acquired including coal transportation system, laying of pipeline, ROW, transmission lines etc. shall be specifically submitted. Status of land acquisition and litigation, if any, should be provided.	The total land of the industry is 13.50 Ha and entire land is in the name of industry and No land acquisition is involved in the current project.
2.8	If the project involves forest land, details of application, including date of application, area applied for, and application registration number, for diversion under FCA and its status should be provided along with copies of relevant documents	There is no Forest land involved in the proposal
2.9	The land acquisition and R&R scheme with a time bound Action Plan should be formulated and addressed in the EIA report.	Not applicable
2.10	Satellite imagery and authenticated topo sheet indicating drainage, cropping pattern, water bodies (wetland, river system, stream, nallahs, ponds etc.), location of nearest habitations (villages), creeks, mangroves, rivers, reservoirs etc. in the study area shall be provided.	The Satellite imagery is given in Fig 3.1 of Section 3.3.2 of Chapter 2.
2.11	Topography of the study area supported by toposheet on 1:50,000 scale of Survey of India, along with a large scale map preferably of 1:25,000	A Topography of the study area is given in section 3.9.4.6 of Chapter 3 and no filling is required for the site.

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	scale and the specific information whether the site requires any filling shall be provided. In that case, details of filling, quantity of required fill material; its source, transportation etc. shall be submitted.	
3	**Ecology biodiversity and Environment**	
3.1	A detailed study on land use pattern in the study area shall be carried out including identification of common property resources (such as grazing and community land, water resources etc.) available and Action Plan for its protection and management shall be formulated. If acquisition of grazing land is involved, it shall be ensured that an equal area of grazing land be acquired and developed and detailed plan submitted.	A detailed study on land use pattern in the study area is complied in section 3.3 of Chapter 3.
3.2	Location of any National Park, Sanctuary, Elephant/Tiger Reserve (existing as well as proposed), migratory routes / wildlife corridor, if any, within 10 km of the project site shall be specified and marked on the map duly authenticated by the Chief Wildlife Warden of the State or an officer authorized by him.	There are no notified National Parks, Sanctuaries, Biosphere Reserves, Migratory Corridors of Wild Animals within 10 km radius of the project site and hence Wildlife Distance map duly authenticated by the Chief Wildlife Warden of the State is not applicable.
3.3	A mineralogical map of the proposed site (including soil type) and information (if available) that the site is not located on potentially mineable mineral deposit shall be submitted.	Noted
3.4	The water requirement shall be optimized (by adopting measures such as dry fly ash and dry bottom ash disposal system, air cooled condenser, concept of zero discharge) and in any case not more than that stipulated by CEA from time to time, to be submitted along with details of source of water and water balance diagram. Details of water balance calculated shall take into account reuse and re-circulation of effluents.	Recycle or reuse of wastewater generated from the distillation process such as spent lees, process condensate, washings etc., after treating in Condensate Polishing Unit (CPU). Utilization of rainwater to reduce the fresh water consumption in the industry. Water balance diagram is provided in Fig 2.10 of Section 2.7.1 of Chapter 2.

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3.5	Water body/Nallah (if any) passing across the site should not be disturbed as far as possible. In case any Nallah / drain is proposed to be diverted, it shall be ensured that the diversion does not disturb the natural drainage pattern of the area. Details of proposed diversion shall be furnished duly approved by the concerned Department of the State	One nala is located within project site (S) & another nala is located adjacent to (outside) the project site (E) for which a buffer of 9 m has been maintained. Further, Vadivu Canal is located at a distance of 0.4 km (S) and another canal is located at a distance of 0.3 km (N). For which a request letter has been submitted for issue of NOC and the copy of the same is enclosed as Annexure-4.
3.6	It shall also be ensured that a minimum of 500 m distance of plant boundary is kept from the HFL of river system / streams etc. and the boundary of site should also be located 500 m away from railway track and National Highways.	Cauvery River is located at a distance of 600 m from the project site. The railway line connecting Kulithalai Railway Station and Pettavithalai Railway Station is passing at an interval of 10 m from the project site boundary towards Northern side. As per the Indian Railway Works Manual, 30 m buffer has to be maintained from the railway line. Therefore, a buffer of 40 m has been retained from the edge of the railway line RoW wherein no activities are proposed. Further, Divisional Engineer, Central Southern Railway, Salem vide letter dated 15.05.2025 informed that the NOC will be issued for the activities proposed within 30 m from the Railway boundary (if any) and issue of NOC is not required for activities proposed beyond 30m from the railway boundary. Therefore, there is no requirement of NOC since a buffer of 30 m from the railway boundary has been maintained and the copy of the same is enclosed as Annexure-5.
3.7	Hydro-geological study of the area shall be carried out through an institute/ organization of repute to assess the impact on ground and surface water regimes. Specific mitigation measures shall be spelt out and time bound Action Plan for its implementation shall be submitted	A Hydro-geological study of the area is given in section 3.9 of Chapter 3.
3.8	Detailed Studies on the impacts of the ecology including fisheries of the River/Estuary/Sea due to the proposed withdrawal of water / discharge of treated wastewater into the River/Sea etc shall be carried out and submitted along with the EIA Report. In case of requirement of marine impact assessment study, the	The details of impacts of the project on Ecology is provided in Section 4.8 of Chapter 4 and the industry is planning to adopt ZLD hence, requisite mitigation measures will be adopted to ensure the same.

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	location of intake and outfall shall be clearly specified along with depth of water drawl and discharge into open sea	
3.9	Source of water and its sustainability even in lean season shall be provided along with details of ecological impacts arising out of withdrawal of water and taking into account inter-state shares (if any). Information on other competing sources downstream of the proposed project and commitment regarding availability of requisite quantity of water from the Competent Authority shall be provided along with letter / document stating firm allocation of water.	The source of water for the project is River Cauvery through dug well and a 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 (Annexure-12).
3.10	Detailed plan for rainwater harvesting and its proposed utilization in the plant shall be furnished. In addition, wherever ground water is drawn, PP shall submit detailed plan of Water charging activity to be undertaken	Detailed rainwater harvesting plan is provided in Section 10.4 of Chapter 10 and the project does not involve drawl of ground water.
3.11	Feasibility of near zero discharge concept shall be critically examined and its details submitted	Noted
3.12	Optimization of Cycles of Concentration (COC) along with other water conservation measures in the project shall be specified.	Noted
3.13	Plan for recirculation of ash pond water and its implementation shall be submitted.	Not Applicable
3.14	Detailed plan for conducting monitoring of water quality regularly with proper maintenance of records shall be formulated. Detail of methodology and identification of monitoring points (between the plant and drainage in the direction of flow of surface / ground water) shall be submitted. It shall be ensured that parameter to be monitored also include heavy metals. A provision for long-term monitoring of ground water	Detailed plan for conducting monitoring of water quality is provided in Chapter – 6.

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	table using Piezometer shall be incorporated in EIA, particularly from the study area.	
3.15	Hazards Characterization: Past incidents of hazard events within 10 Km radius of project area with detailed analysis of causes and probability of reoccurrence	Not Applicable
4	**Environmental Baseline study and mitigation measures**	
4.1	One complete season (critical season) site specific meteorological and AAQ data (except monsoon season) as per latest MoEF&CC Notification shall be collected along with past three year's meteorological data for that particular season for wins speed analysis and the dates of monitoring shall be recorded. The parameters to be covered for AAQ shall include PM10, PM2.5, SO2, NOx, CO and Hg. The location of the monitoring stations should be so decided so as to take into consideration the upwind direction, pre-dominant downwind direction, other dominant directions, habitation and sensitive receptors. There should be at least one monitoring station each in the upwind and in the pre – dominant downwind direction at a location where maximum ground level concentration is likely to occur.	The AAQM data was collected during October 2024 to December 2024. The details of criteria for selection of monitoring locations, parameters and interpretation of AAQM are provided in section 3.6 of Chapter3.
4.2	In case of expansion project, air quality monitoring data of 104 observations a year for relevant parameters at air quality monitoring stations as identified/stipulated shall be submitted to assess for compliance of AAQ Standards (annual average as well as 24 hrs).	The project is a greenfield project and hence not applicable.
4.3	A list of industries existing and proposed in the study area shall be furnished	There are no industries present of similar nature located within the 10 Km radius of the study area. However, list of other industries located in the study area are provided in Table 3.29 of Section 3.11.4.5 of Chapter 3.
4.4	Cumulative impacts of all sources of emissions including handling and	Cumulative impacts of all sources of emissions including handling and transportation of proposed projects on the

Sl. No.	TORs	Compliance to TOR
	transportation of existing and proposed projects on the environment of the area shall be assessed in detail. Details of the Model used and the input data used for modelling shall also be provided. The air quality contours should be plotted on a location map showing the location of project site, habitation nearby, sensitive receptors, if any. The windrose and isopleths should also be shown on the location map. The cumulative study should also include impacts on water, soil and socio-economics.	environment of the area is provided in 4.4.1.4 of Chapter 4.
4.5	Radio activity and heavy metal contents of coal to be sourced shall be examined and submitted along with laboratory reports	Noted.
4.6	Fuel analysis shall be provided. Details of auxiliary fuel, if any, including its quantity, quality, storage etc should also be furnished	Noted.
4.7	Quantity of fuel required, its source and characteristics and documentary evidence to substantiate confirmed fuel linkage shall be furnished. The Ministry's Notification dated 02.01.2014 regarding ash content in coal shall be complied. For the expansion projects, the compliance of the existing units to the said Notification shall also be submitted	Not Applicable.
4.8	Details of transportation of fuel from the source (including port handling) to the proposed plant and its impact on ambient AAQ shall be suitably assessed and submitted. If transportation entails a long distance it shall be ensured that rail transportation to the site shall be first assessed. Wagon loading at source shall preferably be through silo/conveyor belt.	Not Applicable.

Sl. No.	TORs	Compliance to TOR
4.9	For proposals based on imported coal, inland transportation and port handling and rail movement shall be examined and details furnished. The approval of the Port and Rail Authorities shall be submitted	Not Applicable.
4.10	Details regarding infrastructure facilities such as sanitation, fuel, restrooms, medical facilities, safety during construction phase etc. to be provided to the labour force during construction as well as to the casual workers including truck drivers during operation phase should be adequately catered for and details furnished.	During construction phase. Provision of 10 KLD mobile STP has been made and during operation phase, provision of sufficient restrooms/toilet facilities have been made at project site along with provision of 20 KLD STP to treat generated sewage.
5	**Environmental Management Plan**	
5.1	EMP to mitigate the adverse impacts due to the project along with item - wise cost of its implementation in a time bound manner shall be specified.	The detailed EMP to mitigate the adverse impacts due to the project and cost is provided in Chapter – 10.
5.2	A Disaster Management Plan (DMP) along with risk assessment study including fire and explosion issues due to storage and use of fuel should be prepared. It should take into account the maximum inventory of storage at site at any point of time. The risk contours should be plotted on the plant layout map clearly showing which of the proposed activities would be affected in case of an accident taking place. Based on the same, proposed safeguard measures should be provided. Measures to guard against fire hazards should also be invariably provided. Provision for mock drills shall be suitably incorporated to check the efficiency of the plans drawn.	A Disaster Management Plan (DMP) along with risk assessment study is provided in 7.14 of Chapter 7.
5.3	The DMP so formulated shall include measures against likely Fires/Tsunami/Cyclones/Storm Surges/ Earthquakes etc, as applicable. It shall be ensured that DMP consists of both On-site and Off-	On-site and off- site emergency plan is provided in Section 7.13 and Disaster Management Plan (DMP) along with risk assessment study is provided in 7.14 of Chapter 7.

Sl. No.	TORs	Compliance to TOR
	site plans, complete with details of containing likely disaster and shall specifically mention personnel identified for the task. Smaller version of the plan for different possible disasters shall be prepared both in English and local languages and circulated widely.	
5.4	Details of fly ash utilization plan as per the latest fly ash Utilization Notification of GOI along with firm agreements / MoU with contracting parties including other usages etc. shall be submitted. The plan shall also include disposal method / mechanism of bottom ash along with monitoring mechanism.	Boiler ash 36 TPD will be used to manufacture bricks at inhouse brick manufacturing unit.
6	**Greenbelt Development**	
6.1	Detailed scheme for raising green belt of native species of appropriate width (50 to 100 m) and consisting of at least 3 tiers around plant boundary not less than 2000 tree per ha with survival rate of more than 85%shall be submitted. Photographic evidence must be created and submitted periodically including NRSA reports in case of expansion projects. A shrub layer beneath tree layer would serve as an effective sieve for dust and sink for CO2 and other gaseous pollutants and hence a stratified green belt should be developed	Green belt will be developed in 4.67 Ha contributing to 34.64% of the project site with around 11,348 saplings all along the periphery of the project site and all along internal roads and nala buffers. Details are provided in Section 10.6 of Chapter 10.
6.2	Over and above the green belt, as carbon sink, plan for additional plantation shall be drawn by identifying blocks of degraded forests, in close consultation with the District Forests Department. In pursuance to this the project proponent shall formulate time bound Action Plans along with financial allocation and shall submit status of implementation to the Ministry every six months	Detailed scheme for raising green belt of native species is provided in section 10.6 of Chapter 10.
7	**Socio-economic activities**	

Sl. No.	TORs	Compliance to TOR
7.1	Socio-economic study of the study area comprising of 10 km from the plant site shall be carried out through a reputed institute / agency which shall consist of detail assessment of the impact on livelihood of the local communities	The socio-economic study was conducted in the study area villages and details are provided in section 3.11 of Chapter 3.
7.2	Action Plan for identification of local employable youth for training in skills, relevant to the project, for eventual employment in the project itself shall be formulated and numbers specified during construction & operation phases of the Project	The Corporate Environmental Responsibility Plan is worked out as per MoEF&CC Notification vide No. F.No.22 -65/2017-IA.III dated on 1.05.2018, the total CER cost of the project is 6.00 Crores @ 1 % of the total investment of the project (600 Crores).
7.3	If the area has tribal population, it shall be ensured that the rights of tribals are well protected. The project proponent shall accordingly identify tribal issues under various provisions of the law of the land.	Not Applicable
7.4	A detailed CER plan along with activities wise break up of financial commitment shall be prepared in terms of the provisions OM No. 22-65/2017-IA.III dated 30.09.2020.CER component shall be identified considering need based assessment study and Public Hearing issues. Sustainable income generating measures which can help in upliftment of affected section of society, which is consistent with the traditional skills of the people shall be identified.	The Corporate Environmental Responsibility Plan is worked out as per MoEF&CC Notification vide No. F.No.22 -65/2017-IA.III dated on 1.05.2018, the total CER cost of the project is 6.00 Crores @ 1 % of the total investment of the project (600 Crores).
7.5	While formulating CER schemes it shall be ensured that an in-built monitoring mechanism for the schemes identified are in place and mechanism for conducting annual social audit from the nearest government institute of repute in the region shall be prepared. The project proponent shall also provide Action Plan for the status of implementation of the scheme from time to time and dovetail the same with any Govt.	Noted.

Sl. No.	TORs	Compliance to TOR
	scheme(s). CER details done in the past should be clearly spelt out in case of expansion projects	
7.6	R&R plan, as applicable, shall be formulated wherein mechanism for protecting the rights and livelihood of the people in the region who are likely to be impacted, is taken into consideration. R&R plan shall be formulated after a detailed census of population based on socio economic surveys who were dependent on land falling in the project, as well as, population who were dependent on land not owned by them.	Not Applicable
7.7	Assessment of occupational health and endemic diseases of environmental origin in the study area shall be carried out and Action Plan to mitigate the same shall be prepared.	Details of plan and fund allocation to ensure the occupational health & safety of all workers are provided in Section 7.16 and 10.8 of Chapters 7 and 10 respectively.
7.8	Occupational health and safety measures for the workers including identification of work related health hazards shall be formulated. The company shall engage full time qualified doctors who are trained in occupational health. Health monitoring of the workers shall be conducted at periodic intervals and health records maintained. Awareness programme for workers due to likely adverse impact on their health due to working in non-conducive environment shall be carried out and precautionary measures like use of personal equipments etc. shall be provided. Review of impact of various health measures undertaken at intervals of two to three years shall be conducted with an excellent follow up plan of action wherever required.	Details of plan and fund allocation to ensure the occupational health & safety of all workers are provided in Section 7.16 and 10.8 of Chapters 7 and 10 respectively.
8	**Corporate Environment Policy**	
8.1	Does the company has a well laid down Environment Policy approved by	The details of the environment policy if the industry is enclosed in Section 10.2 of Chapter 10.

Sl. No.	TORs	Compliance to TOR
	its Board of Directors? If so, it may be detailed in the EIA report.	
8.2	Does the Environment Policy prescribe for standard operating process / procedures to bring into focus any infringement / deviation / violation of the environmental or forest norms / conditions? If so, it may be detailed in the EIA.	The details of the structure of Environmental Management Cell showing hierarchical system or Administrative order of the company to deal with the environmental issues and for ensuring compliance with the environmental clearance conditions is provided in Section 10.2 of Chapter 10.
8.3	What is the hierarchical system or Administrative order of the company to deal with the environmental issues and for ensuring compliance with the environmental clearance conditions. Details of this system may be given.	
8.4	Does the company has compliance management system in place wherein compliance status along with compliances / violations of environmental norms are reported to the CMD and the Board of Directors of the company and / or shareholders or stakeholders at large? This reporting mechanism should be detailed in the EIA report.	The details of the environment policy if the industry is enclosed in Section 10.2 of Chapter 10.
9	**Miscellaneous**	
9.1	All the above details should be adequately brought out in the EIA report and in the presentation to the Committee.	Noted.
9.2	Details of litigation pending or otherwise with respect to project in any Court, Tribunal etc. shall invariably be furnished.	No litigation pending against the industry.
9.3	In case any dismantling of old plants are envisaged, the planned land use & land reclamation of dismantled area to be furnished.	Not Applicable.
10	**Additional TOR for Coastal Based Thermal Power Plants Projects (TPPs)**	
10.1	Low lying areas fulfilling the definition wetland as per Ramsar Convention shall be identified and clearly demarcated w.r.t the proposed site.	Not Applicable
10.2	If the site includes or is located close to marshy areas and backwaters,	Not Applicable

Sl. No.	TORs	Compliance to TOR
	these areas must be excluded from the site and the project boundary should be away from the CRZ line. Authenticated CRZ map from any of the authorized agencies shall be submitted.	
10.3	The soil levelling should be minimum with no or minimal disturbance to the natural drainage of the area. If the minor canals (if any) have to be diverted, the design for diversion should be such that the diverted canals not only drains the plant area but also collect the volume of flood water from the surrounding areas and discharge into marshy areas/major canals that enter into creek. Major canals should not be altered but their embankments should be strengthened and desilted	Not Applicable
10.4	Additional soil required for levelling of the sites should as far as possible be generated within the site itself in such a manner that the natural drainage system of the area is protected and improved.	Not Applicable
10.5	Marshy areas which hold large quantities of flood water to be identified and shall not be disturbed.	Not Applicable
10.6	No waste should be discharged into Creek, Canal systems, Backwaters, Marshy areas and seas without appropriate treatment. Wherever feasible, the outfall should be first treated in a Guard Pond and then only discharged into deep sea (10 to 15 m depth). Similarly, the Intake should be from deep sea to avoid aggregation of fish and in no case shall be from the estuarine zone. The brine that comes out from Desalinization Plants (if any) should not be discharged into sea without adequate dilution.	Not Applicable
10.7	Mangrove conservation and regeneration plan shall be formulated	Not Applicable

Sl. No.	TORs	Compliance to TOR
	and Action Plan with details of time bound implementation shall be specified, if mangroves are present in Study Area.	
10.8	A common Green Endowment Fund should be created by the project proponents out of EMP budgets. The interest earned out of it should be used for the development and management of green cover of the area.	Not Applicable
10.9	Impact on fisheries at various socio economic level shall be assessed.	Not Applicable
10.10	An endowment Fishermen Welfare Fund should be created out of CER grants not only to enhance their quality of life by creation of facilities for Fish Landing Platforms / Fishing Harbour / cold storage, but also to provide relief in case of emergency situations such as missing of fishermen on duty due to rough seas, tropical cyclones and storms etc.	Not Applicable
10.11	Tsunami Emergency Management Plan shall be prepared wherever applicable and Plan submitted prior to the commencement of construction work.	Not Applicable
10.12	There should not be any contamination of soil, ground and surface waters (canals & village pond) with sea water in and around the project sites. In other words necessary preventive measures for spillage from pipelines, such as lining of Guard Pond used for the treatment of outfall before discharging into the sea and surface RCC channels along the pipelines of outfall and intake should be adopted. This is just because the areas around the projects boundaries could be fertile agricultural land used for paddy cultivation.	Not Applicable
ADDITIONAL TERMS OF REFERENCES		

Sl. No.	TORs	Compliance to TOR
1	Risk assessment study shall be carried out of hazardous chemical storage. Location of alcohol bulk storage tanks shall be placed in such a way that in the event of any fire, accident, explosion or any unforeseen conditions the impact of such event should not go beyond the boundary of the plant i.e., the risk should be tolerable (acceptable) at the boundary.	Risk assessment study is provided in Chapter – 7.
2	Industry shall determine the distance of fire hydrant while finalizing its location from ethanol storage tanks or any other hazardous storage substance shall be based on dispersion of Thermal Radiation so that during any unforeseen situation fire hydrant is always available to operate manually.	Noted
3	EIA/EMP report shall include details such as (i) Details of advertisements for Public Hearing (ii) Copy of forwarding letter of SPCB to MoEF&CC (iii) Legible copy of public hearing proceedings duly signed by the presiding officer (iv) Attendance sheets (v) Action plan to address the issues raised during public along with budget allocation and time line. (vi) Copy of written grievances/submissions if any. If the Public Hearing is in the regional language, an authenticated English Translation of the same should be provided from SPCB	Noted. The details related to Public Hearing will be provided after completion of Environmental Public Hearing (EPH).
4	Total Fresh water requirement during off season shall not exceed 4 KL per KL of alcohol produced.	Noted and will be ensured.
5	Industry shall conduct comprehensive soil testing of the project site and submit a detailed report covering Physical parameters, Chemical parameters, Macro-nutrients and Micro-nutrients. Where deficiencies	The details are provided in Chapter – 3.

Sl. No.	TORs	Compliance to TOR
	are identified, Industry shall prepare a soil enrichment plan tailored to the proposed plant species. The existing greenbelt shall be geo-tagged with precise GPS coordinates along with drone-based aerial photography and videography covering the full extent of the greenbelt plantation.	
6	Adequate buffer needs to be maintained from the railway track. The layout shall be reoriented such way that inflammable and explosive infrastructure of distillery needs to away from the railway track.	The railway line connecting Kulithalai Railway Station and Pettavithalai Railway Station is passing at an interval of 10 m from the project site boundary towards Northern side. As per the Indian Railway Works Manual, 30 m buffer has to be maintained from the railway line. Therefore, a buffer of 40 m has been retained from the edge of the railway line RoW wherein no activities are proposed. The ethanol storage tanks are away (~97m) from the railway line and the cumulative risk analysis shows that the maximum distance of thermal radiation exposure is 31 m.
7	Impacts caused on the surrounding reserve forest due to the proposed project need to be reported and appropriate mitigation measures shall be proposed,	Impacts of industrial activities on nearby Marudur RF is provided in details along with mitigation measures in Section 4.8 of Chapter 4.

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EXECUTIVE SUMMARY

TAMIL

நிர்வாகச் சுருக்கம்

ES 1. திட்ட விளக்கம் (Project Description)

கிரீனெர்ஜி ப்யூர் எத்தனால் பிரைவேட் லிமிடெட் (GPEPL) என்பது கிரீனெர்ஜி பயோ எத்தனால் பிரைவேட் லிமிடெட் (GBEPL) நிறுவனத்தால் முன்னெடுக்கப்படும் ஒரு தனியார் வரையறுக்கப்பட்ட நிறுவனம் ஆகும். இது Greenergy Group நிறுவனக் குழுமத்தின் கீழ் செயல்படுகிறது. GPEPL நிறுவனம் 29 ஜூன் 2022 அன்று நிறுவப்பட்டது. GBEPL நிறுவனம், Greenergy Group நிறுவனத்தின் எத்தனால் செயல்பாடுகளுக்கான ஹோல்டிங் நிறுவனமாக இருந்து, நாடு முழுவதும் பல்வேறு இடங்களில் ஐந்து பயோ-ரிபைனரிகளை (Bio-refineries) அமைக்கும் திட்டத்தை கொண்டுள்ளது.

இந்த நிலையில், கிரீனெர்ஜி ப்யூர் எத்தனால் பிரைவேட் லிமிடெட் நிறுவனம் 600 KLD திறன் கொண்ட தானிய அடிப்படையிலான டிஸ்டில்லரி (Grain-based Distillery) மற்றும் 13 மெகாவாட் (MW) கூட்டு மின்சாரம் உற்பத்தி (Co-generation) அமைப்பை உருவாக்க முன்மொழிந்துள்ளது. இந்த திட்டம் தமிழ்நாடு மாநிலம், கரூர் மாவட்டம், குளித்தலை தாலுகா, குமார மங்கலம் கிராமத்தில் அமைந்துள்ள பல சர்வே எண்களில் செயல்படுத்தப்பட உள்ளது.

திட்டப்பகுதியின் மொத்த பரப்பளவு 33 ஏக்கர் 35 குண்டாஸ் (13.50 ஹெக்டேர்) ஆகும். இப்பரப்பு GPEPL நிறுவனத்தின் பெயரில் பதிவு செய்யப்பட்டுள்ளதாகும்.

முன்மொழியப்பட்ட இந்த திட்டம் தானிய அடிப்படையிலான டிஸ்டில்லரி மூலம் ENA/எத்தனால் உற்பத்தி செய்வதையும், அதனுடன் 13 மெகாவாட் கூட்டு மின்சாரம் உற்பத்தி அமைப்பையும் கொண்டுள்ளது. இந்த திட்டம் EIA Notification 2006 மற்றும் அதன் திருத்தங்களின் படி அட்டவணை 5(g) மற்றும் 1(d) பிரிவுகளின் கீழ் “A” வகைப்படுத்தப்பட்டுள்ளது.

எனவே, இந்த திட்டத்திற்காக சுற்றுச்சூழல், வனம் மற்றும் காலநிலை மாற்ற அமைச்சகம் (MoEF&CC) மூலம் சுற்றுச்சூழல் அனுமதி (Environmental Clearance) பெறுவது கட்டாயமாகும்.

திட்டத்தின் முக்கிய அம்சங்கள் கீழே வழங்கப்பட்டுள்ளன.

அட்டவணை ES-1: திட்டத்தின் முக்கிய அம்சங்கள்

வரிசை எண்	பொருட்கள்	குறிப்பிட்ட
1.	திட்டத்தின் பெயர்	600 KLD தானிய அடிப்படையிலான எத்தனால் (எரிபொருள்) ஆலை மற்றும் 13 மெகாவாட் கூட்டு மின்சாரம் (Co-generation) அலகு நிறுவல் கிரீனெர்ஜி ப்யூர் எத்தனால் பிரைவேட் லிமிடெட் (GPEPL) நிறுவனத்தால், தமிழ்நாடு மாநிலம், கரூர் மாவட்டம், குளித்தலை வட்டம், குமாரமங்கலம் கிராமத்தில் அமைந்துள்ள 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 ஆகிய சர்வே எண்களில் இந்தத் திட்டம் செயல்படுத்தப்படுகிறது. இந்தத் திட்டம் 600 KLD திறன் கொண்ட தானிய அடிப்படையிலான டிஸ்டில்லரி (Grain-based Distillery) மற்றும் 13 மெகாவாட் கூட்டு மின்சாரம் உற்பத்தி (Co-generation) அலகை நிறுவுவதைக் குறிக்கிறது.
2.	திட்டத்தின் வநாக்கம்	600 KLD திறெ் னகாண்ட தாெ்ிW அடிப்பரடயிலாெ் டிஸ்டில்லரி மற்றும் 13 னமகாவாட் Co-generation அலரக அரமத்தல்
3.	முன்னெடுப்போர்	Syed Fahad, வமலாண்ரம இWக்குநர், கிரீனெர்ஜி ப்யூர் எத்தொல் பிரரவவட் லிமினடட்
4.	னமாத்த முதலீடு	ரூ. 600 வகாடி
5.	திட்ட இடம்	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,

எண்	பொருட்கள்	விவரங்கள்
6	திட்ட வரக	EIA Notification 2006 படி Category 'A' – 5(g), 1(d)
7	நிலப் பரப்பளவு	னமாத்தம் 33 ஏக்கர் 35 குண்டாஸ் (13.50 ன க் வ ட ர்) காலி நிலம், 127 மரங்களுடெ், Greenergy Pure Ethanol Pvt Ltd (GPEPL) நிறுவெத்திெ் னபWரில் உள்ளF
8	அகலம் & நீளம்	10°54'10.17"N, 78°28'30.85"E
9	மிதவளம்	கட்டுமா கட்டத்தில்: 100 வபர் னசWல்பாட்டு கட்டத்தில்: 450 வபர்
10	நீர் வதரவயும் மூலமும்	**கட்டுமான கட்டம்:** 20 KLD (குடிநீர்: 5 KLD, கட்டுமானம்: 15 KLD) – தனியார் டேங்கர் மூலம் **செயல்பாட்டு கட்டம்:** மூலம்: Cauvery River 2500 KLD நீரைப் பெற விண்ணப்பம் 19.09.2024 அன்று நீர்வளத் துறை, திருச்சி முதன்மை பொறியாளரிடம் சமர்ப்பிக்கப்பட்டுள்ளது மொத்த நீர் தேவை: 3700 KLD புதிய நீர்: 2500 KLD மீள்சுழற்சி நீர்: 1200 KLD
11	மின்சாரம் தேவையும்	100 TPH திறன் கொண்ட பாய்லர் மற்றும் 13 MW மின்சாரம் உற்பத்தி (அரிசி/மக்காச்வாசம் ஒடு மற்றும் இறக்குமதி நிலக்கரி எரிபொருளைப் பயன்படுத்தி)
12	வழங்கலும் வவரல நாட்கள் திட்ட வரக	**கட்டுமான மற்றும் மின்சார அம்சங்கள்** 1. கட்டுமொன் கட்டம்: • 500 kW – 2 × 750 KVA DG மின் உற்பத்தி அலகுகள் மூலம் 2. பாய்வழி ஒட்டு கட்டம்: • 11 MW – 13 MW கூட்டு மின்சாரம் (Co-generation) மூலம் • அதிகமான மின்சாரம் Grid-க்கு விற்பனை செய்யப்படும் 3. பீபுல் வசதி: • 2 × 750 KVA DG மின் உற்பத்தி அலகுகள் • மின்சாரம் நெருக்கடி நேரங்களில் மட்டுமே பயன்படுத்தப்படும

ES 1.1 மூலப் பொருள்

அட்டவசண ES 2: திட்டேதிற்கு தேசவயொன மூலப் பொருள்

வரிசை எண்	மூலப் பொருள் விவரங்கள்	அளவு	அலகு	தைய்மிப்பு	மூலம்	தொற்று /தூரம்	தூரம்
1	தானியம் – உருண்ட அரிசி	425	TPD	சிவலாஸ் விவசாயிகள்	உள்ளூர்	லாரி	50 கி.மீ
2	தானியம் – மக்கா	525	TPD				
3	ஆல்பா அமிவலஸ்	1260	கி.கி/ நாள்	விவசாயிகள்	அருகிலுள்ள சந்ரத		20 கி.மீ
4	அமிவலாகுலூ வகாசி						
5	நியூட்வரஸ்						
6	விஸ்வகாரசம்						
7	வசாடிWம் ர ட்ராக்ரசடு	12	TPD	எம்.எஸ்			
8	யூரியா	3600	கி.கி/ நாள்	பாலி ரபக ள்			
9	உலர் ஈஸ்ட்	300	கி.கி/ நாள்	பாலி ரபகள்			
10	ஐடி-ஃவபாமிங் ஏனஜெட்	2000	லிட்டர்/நாள்	டிரம்கள்			
11	சல்ப்யூரிக் அமிலம்	700	கி.கி/ நாள்	டிரம்கள்			

ES 1.2 பொருட்கள் மற்றும் துணைப் பொருட்கள்

அட்டவணை ES 3: தயாரிப்புகள் மற்றும் துணை தயாரிப்புகள் உருவாக்கம்

வரிசை எண்	ேயொரி ்பு	திறன்	குறி ்புகள்
A. பொருட்கள்			
1	எத்தொல்	600 KLPD	-
2	இரட்டை மின்உற்பத்தி	13 MW	உற்பத்தியாகும் மின்சாரம் தொழிற்சாலை செயல்பாட்டிற்கு பயன்படுத்தப்படும். மீதமுள்ள மின்சாரம் மின் வலையமைப்பிற்கு (Grid) விற்கப்படும்.
B. துணைப் பொருட்கள்			
3	DDGS	300 TPD	மாட்டு தீவனமாக / மீன் தீவனமாக விற்கப்படும்
4	CO_2	150 TPD	50% டிரை ஐஸ் தயாரிப்பிற்கும் பயன்படுத்தப்படும்

ES 1.3 இடத் தேர்வு அளவுகோல்கள்

திட்டத் தளம் மிகவும் ஏற்றதாகும், ஏனெனில் இது விவசாய நிலங்களால் சூழப்பட்டுள்ளது. அங்கிருந்து மக்காச்சோளம் மற்றும் அரிசி போன்ற மூலப்பொருட்கள் எளிதாக கிடைக்கின்றன.

திட்டத் தளத்திற்கான அணுகல் பின்வரும் சாலைகள் மூலம் உள்ளது:
MDR 1002 – 1.14 கி.மீ (மேற்கு)
NH-81 (குளித்தலை பைப்பாஸ்) – 0.10 கி.மீ (வடக்கு)
MDR 658 – 0.61 கி.மீ (கிழக்கு)

இந்த சாலைகள் மூலம் மூலப்பொருட்களை எளிதாக திட்டத் தளத்திற்கு கொண்டு செல்ல முடியும்.

தண்ணீர் தேவைகள் காவிரி நதியிலிருந்து பூர்த்தி செய்யப்படும். காவிரி நதி திட்டத் தளத்திலிருந்து சுமார் 0.60 கி.மீ தூரத்தில் அமைந்துள்ளது**.**

ES 1.4 பையல்முசற விளக்கம்

தானிய அடிப்படையிலான எத்தனால் உற்பத்தி செயல்முறை பின்வரும் கட்டங்களை கொண்டுள்ளது:

- தானிய அரைத்தல் (Grain Milling)
- திரவமாக்கல் பிரிவு (Liquefaction Section)
- ஜெட் குக்கிங் (Jet Cooking)
- திரவமாக்கல் (Liquefaction)
- பகுதி முன் சக்கரிபிகேஷன் செயல்முறை (Partial Pre-Saccharification Process)
- காட்ச்சி பிரிவு (Fermentation Section)

ES 1.4 செயல்முறை விளக்கம் (தொடர்ச்சி)

பல அழுத்த வெற்றிட ஆவியாக்கம் மற்றும் நீரிழப்பு தொழில்நுட்பம் (Multi Pressure Vacuum Distillation & Dehydration Technology), ஆவியாக்கம் (Evaporation) ஆகியவை பயன்படுத்தப்படுகின்றன. விரிவான செயல்முறை பின்வருமாறு:

• தானிய அடிப்படையிலான எத்தனால் உற்பத்தி தானிய அரைத்தலுடன் தொடங்குகிறது. இதில் மக்காச்சோளம் அல்லது பிற தானியங்கள் நுண்ணிய மாவாக அரைக்கப்படுகின்றன. இது என்சைம் செயல்பாட்டிற்கான மேற்பரப்பை அதிகரிக்கிறது.

• அரைக்கப்பட்ட மாவு திரவமாக்கல் பிரிவில் (Liquefaction Section) தண்ணீருடன் கலந்து ஸ்லரியாக (Slurry) மாற்றப்படுகிறது..

- இந்த ஸ்லரி ஜெட் குக்கிங் (Jet Cooking) செயல்முறைக்கு உட்படுத்தப்படுகிறது. இதில் நீராவி அழுத்தத்தில் சூடாக்கப்பட்டு ஸ்டார்ச் ஜெலட்டினைசேஷன் செய்யப்படுகிறது. இதனால் அது மேலும் என்சைம்களுக்கு எளிதில் கிடைக்கக்கூடியதாக மாறுகிறது.

- குளிர்வித்த பிறகு, கூடுதல் என்சைம்கள் சேர்க்கப்பட்டு திரவமாக்கல் தொடர்கிறது மற்றும் ஸ்டார்ச் டெக்ஸ்ட்ரின்களாக மாற்றப்படுகிறது. பகுதி முன் சக்கரிபிகேஷன் நிலையத்தில் (Partial Pre-Saccharification), குளுகோஅமிலேஸ் என்சைம்கள் டெக்ஸ்ட்ரின்களை குளுகோஸாக மாற்றத் தொடங்குகின்றன.

- காட்சசி-புளிப்பு (Fermentation) கட்டத்தில், ஈஸ்ட் (Yeast) குளுகோஸை எத்தனால் மற்றும் கார்பன் டையாக்சைடாக (CO_2) பல நாட்களில் மாற்றுகிறது.

- உருவான எத்தனால், பல அழுத்த வெற்றிட ஆவியாக்கம் (Multi Pressure Vacuum Distillation) மூலம் தண்ணீர் மற்றும் பிற அசுத்தங்களிலிருந்து பிரிக்கப்படுகிறது. பின்னர் Molecular Sieves போன்ற நீரிழப்பு தொழில்நுட்பம் பயன்படுத்தி எரிபொருள் தரமான எத்தனால் பெறப்படுகிறது.

- இறுதியாக, ஆவியாக்கம் (Evaporation) செயல்முறைகள் மூலம் துணை தயாரிப்புகள் திரட்டப்படுகின்றன. இதன் மூலம் Distillers Dried Grains with Solubles (DDGS) உருவாகி, இது சிறந்த மாட்டு தீவனமாக பயன்படுத்தப்படுகிறது.

ES 2 சுற்றுச்சூழல் விளக்கம்

திட்டத் தளம் மற்றும் ஆய்வு பகுதியின் அடிப்படை சுற்றுச்சூழல் நிலையை மதிப்பிடுவதற்காக, EHSCPL நிறுவனம் 2024 அக்டோபர் முதல் டிசம்பர் வரை (மழைக்குப் பின்னைய காலம்) பல்வேறு சுற்றுச்சூழல் கூறுகளை கண்காணித்தது.

இதுடன்:

- 10 கி.மீ சுற்றளவில் தள ஆய்வு
- இரண்டாம் நிலை தரவு சேகரிப்பு

- உள்ளூர் மக்கள் மற்றும் அதிகாரிகளுடெ் கலந்Fரரwாடல்

விமர்சிக்கப்பட்டது

ES 2.1 நில பயன்பாடு (Land Use)

329.72 ஹெக்டர் (சதுர கி.மீ) ஆய்வு பகுதியில் நில பயன்பாடு பின்வருமாறு உள்ளது:

- பயிர் நிலம் – 68.33 %
- நீர்நிரல்கள் – 11.59 %
- கட்டிடப் பகுதிகள் – 10.76 %

திட்டத் தளம் காவிரி நதியின் நீர்ப்பிடிப்பு பகுதியில் அமைந்துள்ள விவசாய நிலங்களால் சூழப்பட்டுள்ளது.

ES 2.2 சுற்றுப்புற காற்றுத் தரம் (Ambient Air Quality)

காற்றுத் தர அளவீடுகள் பின்வருமாறு பதிவாகியுள்ளன:

- PM_{10} (திட்டத் தளம்) – 48.73 µg/m³
- PM_{10} (அதிகபட்சம்) – 57.06 µg/m³ (கருப்பம்பட்டி – A5)
- $PM_{2.5}$ (திட்டத் தளம்) – 19.38 µg/m³
- $PM_{2.5}$ (அதிகபட்சம்) – 24.63 µg/m³ (கருப்பம்பட்டி – A5)
- SO_2 (திட்டத் தளம்) – 9.51 µg/m³
- SO_2 (அதிகபட்சம்) – 11.72 µg/m³ (கருப்பம்பட்டி – A5)
- NO_2 (திட்டத் தளம்) – 10.56 µg/m³
- NO_2 (அதிகபட்சம்) – 12.76 µg/m³ (கருப்பம்பட்டி – A5)
- CO (திட்டத் தளம்) – 0.87 mg/m³
- CO (அதிகபட்சம்) – 1.12 mg/m³ (கருப்பம்பட்டி – A5)

ES 2.2 சுற்றுப்புற காற்றுத் தரம் (விளக்கம்)

அதிகபட்ச மதிப்புகள் பெரும்பாலும் கருப்பம்பட்டி பகுதியில் பதிவாகியுள்ளன. இதற்குக் காரணம் அந்த பகுதி மக்கள் வசிக்கும் இடமாகவும், கருப்பம்பட்டி முதல் ராஜபாளையம் பகுதிகளின் முக்கிய வீதி மற்றும் போக்குவரத்து சாரலால் உள்ளது.

இரணக்கப்பட்டிருப்பதாலும், வாகெப் போக்குவரத்து அதிகமாக இருப்பதாலும் ஆகும்

ஆய்வு பகுதியில் நிலையான வளர்ச்சி மற்றும் மாசு உற்பத்தி மூலங்கள் இல்லாததால், சுற்றுப்புற காற்றுத் தரக் கண்காணிப்பு (AAQM) முடிவுகள் தேசிய சுற்றுப்புற காற்றுத் தர வரம்புகள் (NAAQS) உள்ளடக்கத்தில் உள்ளன. எனவே, ஆய்வு பகுதியில் காற்றுத் தரம் "நல்லது" என மதிப்பிடப்படுகிறது.

ES 2.3 சுற்றுப்புற சத்த அளவுகள் (Ambient Noise Levels)

ஆய்வுக்கான 8 கண்காணிப்பு இடங்களில்:

- 6 இடங்கள் – குடியிருப்பு பகுதி
- 1 இடம் – வணிக பகுதி
- 1 இடம் – தொழிற்பகுதி

பகல் நேரத்தில் சத்தம் 48.56 dB(A) முதல் 63.06 dB(A) வரை பதிவாகியுள்ளது.
இரவு நேரத்தில் 38.84 dB(A) முதல் 52.80 dB(A) வரை பதிவாகியுள்ளது.

அனைத்து இடங்களிலும் பதிவாகிய சத்த அளவுகள் மத்திய மாசு கட்டுப்பாட்டு வாரியத்தின் (CPCB) நிர்ணயித்த வரம்புகளுக்குள் உள்ளன.

ES 2.4 தற்காலிக நீர் தரம் (Surface Water)

திட்டத் தளம் மற்றும் ஆய்வு பகுதியில் 7 இடங்களில் வமர்ப்பரப்பு நீர் மாதிரிகள் வசகரிக்கப்பட்டன.
ஆனால், அச்சூர் கிராமம் அருகிலுள்ள ஏரி (SW-8) ஆய்வு காலத்தில் வறண்ட நிலையில் இருந்ததால் மாதிரி எடுக்கப்படவில்லை.

பரிசோதனை முடிவுகள்:

- pH: 7.64 (SW-6) முதல் 8.18 (SW-1) வரை
- மின் கடத்தல் திறன் (EC): 410 µS/cm (SW-2) முதல் 755 µS/cm (SW-7)
- திட இரசாயனங்கள் (Total Dissolved Solids, TDS): 90 mg/L (SW-2) முதல் 150 mg/L (SW-7)
- குளோரைடு: 36.2 mg/L (SW-2) முதல் 73.91 mg/L (SW-7)

- கரிம ஆக்சிஜன் (DO): 5.1 mg/L முதல் 5.7

நாமத்துக் காலிஃபார்ம் (Total Coliform): 31 MPN/100 ml முதல் 63 MPN/100 ml

CPCB தரநிரல்களின்படி:

- 3 மாதிரிகள் 'B' வகை – குடியிருப்புப் பயன்பாட்டிற்கு ஏற்றவை
- 4 மாதிரிகள் 'D' வகை – விலங்குகள் மற்றும் மீன் வள வளர்ச்சிக்குப் பயன்படத்தக்கவை

ES 2.5 நிலத்தடி நீர் (Ground Water)

திட்டத் தளம் மற்றும் ஆய்வு பகுதியில் 8 இடங்களில் நிலத்தடி நீர் மாதிரிகள் வசகரிக்கப்பட்டன.

முடிவுகள்:

- pH: 7.52 முதல் 7.98 வரை
- மொத்த கடத்தல் திறன் (TH): 322 mg/L முதல் 532 mg/L
- மின் கடத்தல் திறன் (EC): 1689 µS/cm முதல் 2554 µS/cm
- குளோரைடு: 180.02 mg/L முதல் 468.11 mg/L
- சோடியம்: 1.9 mg/L முதல் 37.69 mg/L
- ஃப்ளூரைடு: 0.51 mg/L முதல் 0.98 mg/L

அனைத்து அளவுகளும் IS 10500:2012 தரநிரல்களின்படி ஒப்புக்கொள்ளத்தக்க வரம்புகளுக்குள் உள்ளன.

ES 2.6 மண் தரம் (Soil)

மண் ஆய்வு முடிவுகள் பின்வருமாறு:

- அனைத்து இடங்களிலும் மண் வரக மணல் கலப்பு (Sandy Loam) வகையாக உள்ளது
- இம்மண் அதிக நீரை விரைவாக வடிகட்டும் தன்மை கொண்டது
- கரிம கார்பன் அளவு நடுத்தரமாக உள்ளது – இதன் காரணமாக கட்டுமான செயல்பாடுகளுக்கு ஏற்றது

- pH மதிப்பு நடுத்தர ஊட்டச்சத்து அளவுக்குள் உள்ளது – கட்டிட ஆதரவிற்கு ஏற்றது

- மின் கடத்தல் திறன் (EC) சாதாரண அளவுக்குள் உள்ளது. இதன் பொருள்:

- மண் தரம் கட்டுமான நடவடிக்கைகளுக்கு ஏற்றது
- பசுமை வளக்காட்சி (Greenbelt) வளர்ச்சிக்குப் பயன்படுத்தக்கூடியது

ES 2.7 புவியியல் (Geology)

ஆய்வு பகுதி மற்றும் சுற்றுப்புறங்கள் ஆர்க்கியன் (Archaean) காலத்தில் உருவான ராக்குமரடைட் காம்ப்ளெக்ஸ் (Archaean Rock Complex) – பவ்வார்டைட் ரைஸ் / ராக்குமரடைட் பார்வைகள் மூலம் உருவானவை.

காவிரி நதிக்கரையில் களிமண், சில்ட் மற்றும் மணல் அடங்கி உருவான நதி அடிவரவு (Alluvium) காணப்படுகிறது.

பாறைகள் Weathering மூலம் மிகக் குறைவாக மாற்றம் அடைந்துள்ளன; இது 0.25 மீட்டர் முதல் அதிகபட்சம் 3.0 மீட்டர் வரை மட்டுமுள்ள கிணறு பகுதிகளில் காணப்படுகிறது.

ES 2.8 நீரியியல் (Hydrogeology)

திட்டப் பகுதி மற்றும் அதன் சுற்றுப்புறம் படிபினளயி நிலவடிவம் (Pediplain) கொண்டுள்ளது.

உச்ச உயரம் (Topographic Elevation):

- அச்சூர் அருகிலுள்ள மேற்பரப்புப் பகுதி (திட்டத் தளத்தின் மேற்கு) – 1117.9 மீ MSL
- நபருகமணி கிராமம் அருகில் (திட்டத் தளத்தின் கிழக்கு) – 87.2 மீ MSL
- நீர்வழி அமைப்பு (Drainage pattern):
- முதன்மை மற்றும் துணை நதிநிலைகள் (Dendritic to Sub-Dendritic)
- வடிகால் அடர்த்தி (Drainage density): 0.49 – 0.58 கி.மீ/கி.மீ^{2}
- படிபினளயியில், ஆற்றங்கரைப்பகுதிகள் (Alluvial plains) பகுதிகளுக்கு மேல் அதிக வடிகால் அடர்த்தி காணப்படுகிறது
- நீர்வழிகள் தற்காலிகமானவை (Ephemeral)

- காவிரி நதி மட்டும் நிரந்தர நீர்வழி கொண்டது

ES 2.9 உயிரியல் சூழல் (Biological Environment)

திட்ட பகுதி டெக்கன் இன்டீரியர் ரீஜியன் (Deccan Interior Region) பகுதியில் அமைந்துள்ளது.

10 கி.மீ சுற்றளவில் நில பயன்பாடு:

- பயிர் நிலம் – 68.33 %
- நீர்நிரல்கள் – 11.59 %

அறிவிக்கப்பட்ட காடுகள் (Reserved Forests):

- மருதூர் RF
- குளித்தரைல் RF
- மணத்தட்ரட் RF

திட்டத் தளம் பெரும்பாலும் காலியான நிலமாகும். ஆய்வு பகுதியில் மொத்தம் 127 மரங்கள் காணப்படுகின்றன:

- தேங்காய் (Cocos nucifera) – 108
- வவம்பு (Azadirachta indica) – 6
- பறை (Borassus flabellifer) – 8
- நரயல் ட்ரீ (Samanea saman) – 5

இந்த மரங்கள் பாதுகாக்கப்படுவன. திட்டத்தில் நிலம் மற்றும் தாவரங்கள் அல்ல, கட்டிடங்கள் அகற்றப்படும் இடமில்லை.

நீர் வளங்கள்:

காவிரி LIS திட்டங்களின் கீழ் நல்ல கால்வாய் அரமப்பு (Canal network) உள்ளது.
பகுதியிலுள்ள சில நீர்வதக்கத் தொட்டிகள் (Tanks) இருந்தாலும், காவிரி நதியின் குறைந்த ஓட்டம் காரணமாக அவை வறண்டு காணப்படுகின்றன.
இந்த திட்டப் பகுதி காவிரி நதியின் நீர்ப்பிடிப்பு (Catchment) பகுதியில் அமைந்துள்ளது.
நீர்வழி வடக்கு மற்றும் கிழக்கு நோக்கிலும் பரப்பப்பட்டுள்ளது.

- • 18 இடங்களில் சுமார் 226 பறவைகள் பதிவாகியுள்ளன

உயிரியல் சூழல் பின்விளைவுகள்

நீர்நிரல்கள், காடுகள் மற்றும் விவசாய நிலங்கள் காரணமாக ஏற்ற சூழல் உள்ளது.

தாவர பல்வகைமை, தாவர அரம் மற்றும் சிறு வாழ்விடங்கள் (Microhabitats) காரணமாக பறவைகளுக்கு:

- உணவுத் தட்டல்
- தற்காலிக தங்குமிடம்
- இடமாற்றம் மற்றும் பாதுகாப்பு
- போன்ற வசதிகள் கிடைக்கின்றன. இதனால் பறவைகளின் பல்வகைமை அதிகரிக்கிறது.
- ஆய்வில் Schedule-I வகை உயிரினங்கள் பதிவாகவில்லை.

உள்ளூர் மக்கள் தகவல்கள்:

- மூன்று வகை அணில் (Three-striped Palm Squirrel)
- வான்பொன் குரங்கு (Bonnet Macaque)
- இந்த பகுதியில் காணப்படுகின்றன.
- சுற்றுப்புற மக்களின் கருத்துக்கள் (Perceptions of Respondents)

அரைத் கிராம மக்களும் திட்டத் தொடர்புடைய வரவுகள் குறித்து நேரடி அணுகுமுறை வழங்கினர். சிலர் எத்தனால் கலப்பு திட்டம் (Ethanol Blending Programme) மற்றும் டிஸ்டில்லரி தொடர்பில் குழப்பத்தில் இருந்தனர், ஏனெனில் அவர்கள் ஆரம்பத்தில் எத்தனால் உற்பத்தி பற்றி அறிவிலே இருந்தனர்.

நபரும்பாலை கிராம மக்கள் உள்ளூர் விவசாயப் பழக்கவழக்கங்களைப் பற்றி குறிப்பிட்டனர், குறிப்பாக குமாரமங்கலம், நபட்டவார்த்தரல் மற்றும் வமட்டு மருதூர் கிராமங்களில். இங்கு கல்வித் தரம் அதிகம் மற்றும் நெறியியல் கல்வி பெற்றோர் அதிகமாக உள்ளனர்.

CSR / CER நடவடிக்கைகளின் கீழ், கிராம மக்கள் அரசு பள்ளிகள் மற்றும் முதன்மை சுகாதார நிலையங்களில் அடிப்படை வசதிகளை மேம்படுத்த வேண்டும் என்பதற்கும், சமூக வளர்ச்சிக்கான நடவடிக்கைகள் மேற்கொள்ளப்பட வேண்டும் என்பதற்கும் கோரிக்கை செய்தனர்.

நலனுக்காக கட்டுமானப் பணிகள் முறையாக நடத்தப்பட வேண்டும் என்றும் கோரிக்கை செய்தனர்.

விவசாயிகள் கருத்துக்கள்

கரும்பு, மக்காச்வசாளம் மற்றும் அரிசி பயிரிடும் விவசாயிகள் இந்த திட்டத் தொடர்புடைய வரவுகளை வரவேற்றுள்ளனர்.
திட்டப் பகுதி கிராமங்களுக்கு அருகே இருப்பதால், போக்குவரத்து வசதி மேம்படும் என்று அவர்கள் எதிர்பார்க்கின்றனர்.
நிலத்தின் மதிப்பு உயர்வு மற்றும் கிராமத்தின் ஒட்டுமொத்த வளர்ச்சி நிகழும் என்பதும் மக்கள் நம்புகின்றனர்.

பொதுவான கருத்து (Overall Conclusion)

சமூக ஆய்வு முடிவுகள், இந்த திட்டத்தை உள்ளூர் மக்கள் பெரும்பாலும் நேர்மையாக ஏற்றுக் கொண்டுள்ளனர் என்பதை காட்டுகின்றன. கிராம மக்கள் எதிர்பார்க்கும் நன்மைகள்:

- உள்ளூர் வேலை வாய்ப்புகள்
- விவசாய பொருட்களின் போக்குவரத்து வசதி மேம்பாடு
- நபாருளாதார முன்னேற்றம்

எனவே, இந்த திட்டம் உள்ளூர் சமூக-நபாருளாதார வளர்ச்சிக்கு முக்கிய ஊக்கியாக கருதப்படுகிறது. ஆனால், சமூக பாதுகாப்பு மற்றும் சுற்றுச்சூழல் பாதுகாப்பு நடவடிக்கைகள் முறையாக பூர்த்தி செய்யப்பட்டால் மட்டுமே இந்த நன்மைகள் முழுமையாக நடைமுறையில் அமையும்.

ES 3. எதிர்பார்க்கப்படும் சுற்றுச்சூழல் தாக்கங்கள் மற்றும் குசற் நடவடிக்கைகள்

வரிசை எண்	சுற்றுச்சூழல் தாக்கங்கள்	நடவடிக்கைகள்	குறைக்கும் நடவடிக்கைகள்
A. கட்டுமொன கட்டம்			
1.	காற்று மாசு	வாகனங்கள் இயக்கம் மற்றும் கட்டுமான பணிகளுக்கான DG செட் காரணமாக தூசி மற்றும் திண்மக் குணங்கள் (Particulate Matter) அதிகரிக்கும்	• தூசி கட்டுப்பாட்டிற்காக இடைவிடாது நீர் தெளிப்பு (Water Sprinkling) செய்யப்படும • டீசல் இயந்திரங்கள் மற்றும் கட்டுமான இயந்திரங்கள் பராமரிக்கப்பட்டு எரிசார்ந்த வாயு வெளியீடு குறைக்கப்படும் • கட்டுமான இயந்திரங்களுக்கு சரியான பராமரிப்பு மற்றும் சர்வீசிங் மேற்கொள்ளப்படும்
2.	சத்த நிரல	அதிக சத்தம் பணியாளர்களின் உடல் நலம் மற்றும் சுற்றுப்புற வளமை பாதிக்கும்.	• இயந்திரங்களுக்கு சத்தக் கட்டுப்பாட்டு சாதனங்கள் (Caps, Silencers, Mufflers) வழங்கப்படும் மற்றும் பராமரிக்கப்படும் • அதிக சத்தம் உள்ள பகுதிகளில் பணியாளர்கள் கருமெதி / காது அடைப்பு பிளக்குகள் கொண்ட PPEs அணிவார்கள் • உச்ச சத்தம் பகுதி வழியாக தடுப்பு கம்பிகள்/கட்டுப்படுத்தப்பட்ட இடங்கள் வழங்கப்படும், அதிகபட்சம் பகல் நேரத்தில் மட்டுமே இயங்கும் • இயந்திரங்கள் எங்கு சாத்தியமாயினும் சத்தக் கட்டுப்பாட்டு கருவிகள் நிறுவப்படும்
3.	நீர் தரம்	கழிவுநீர் முறையாக பராமரிக்கப்படாவிட்டால் கிணறு மற்றும் மேல்நிலை நீர் மாசுபடும். இதனால் நோய்கள் உருவாக வாய்ப்பு மற்றும் உடல் பாதிப்பு ஏற்படும்.	• பணியாளர் காம்ப் மற்றும் சுற்றுப்புறம் சுத்தமாக பராமரிக்கப்படும்; கழிவு வசகரிப்பு தொட்டிகள் மற்றும் நல்ல வடிகால் அமைப்புகள் நிறுவப்படும் • DG செட் உற்பத்தி நீர் எண்ணணும், பூசப்பட்ட பட்டைகள் ஆகியவை TNPCB அங்கீகாரம் பெற்ற இடங்களில் வசகரிக்கப்பட்டு HWM Rule 2016 இன் படி பராமரிக்கப்படும்

			நீர் மற்றும் கழிவு நீர் மேலாண்மை • எண்ணெய் தடுப்பிகள் (Oil Interceptors) நிறுவப்படும். • வாகனங்கள் குறிப்பிட்ட இடங்களில் கழுவப்படுவார்கள்; திடீர் தடைகளை ஏற்படுத்தும் எண்ணெய் தடுப்பிகள் உடனடியாக சுத்தப்படுத்தப்படும். • கட்டுமான பகுதிகளில் பாயும் நீரை நிறுத்த காங்கிரீட் கால்வாய்கள் (Storm Water Drain) கட்டப்படும். • தொழிலாளர் காம்ப் கழிவுநீர் STP மூலம் சுத்தப்படுத்தப்படும்.
4.	மண் மேலாண்மை	கட்டுமான செயல்பாடுகளின் காரணமாக மண் தற்காலிகமாக மாற்றப்படலாம்.	• அகற்றப்பட்ட மண் தனித்தனியாக பசுமை பரப்பில் (Greenbelt) சேமித்து பயன்படுத்தப்படும். • மண் ஓட்டத்தை கட்டுப்படுத்த கரைகள் மற்றும் Garland Drains அமைக்கப்படும்; கால்வாய்கள் அடிக்கடி சுத்தப்படுத்தப்படும். • நீர் துளைத்தல் (Sprinkling) மூலம் மண் கட்டுப்பாடு: 2–3 முறை/நாள். • சாரல கட்டுமானத்துடனான இடங்களில் சாரல வடிகால்கள் அமைக்கப்படும். • Ditches, Out Sloping, Culverts, Water Bars, Dips போன்ற அமைப்புகள் ஏற்படுத்தப்படும். • அனைத்து நீர் வடிகால்களும் நீரை தாவரங்கள் மூலம் வடிகட்டும் முறையில் பராமரிக்கப்படும்.

			• கட்டுமானத்திற்கு முன்னதாக சுற்றுப்புறத்தில் மண் பிரணப்பாக மற்றும் வளமாக வளரும் புல் மற்றும் தாவரங்கள் வளர்க்கப்படும்; இது மண்ணின் அழுகரலையும் குறைக்கும்.
5.	சுற்றுச்சூழல் மற்றும் உயிரியல் பல்வருமாற்றம்	• எந்த மரங்களும் அகற்றப்படமாட்டாது; அவை பாதுகாக்கப்படுவன. • கட்டுமான பணிகளின் சத்தத்தால் சிறிய விலங்குகள் மற்றும் பறவைகள் தற்காலிகமாக இடமாற்றம் செய்யப்படலாம். • திட்டப்பகுதியிலிருந்து 320 மீட்டர் தூரத்தில் உள்ள Marudur காப்புக்காடு (RF) உட்பட சுற்றியுள்ள பகுதிகளில் விலங்குகள் மற்றும் பறவைகள் பாதிக்கப்படலாம். • தூசி படிவுகள் அருகிலுள்ள தாவரங்களின் ஒளி சுவாசத்திற்கு பாதிப்பு ஏற்படுத்தலாம்.	**குறைக்கும் நடவடிக்கைகள்:** • விலங்குகள் பாதிக்கப்படாமல் இருக்க கட்டுமான பணிகள் பகல் நேரத்தில் மட்டும் செய்யப்படும். • திட்ட பகுதி மற்றும் Marudur காப்புக்காடு இடையே பாதிப்புகளை குறைக்க பாசை கால்வாய்கள் மற்றும் NH-81 வழியாக ஏற்படும் தாக்கங்கள் கண்காணிக்கப்படும். • தூசி பரவலை கட்டுப்படுத்த சாரலக்களில் தினமும் 3 முறை தண்ணீர் துளைத்தல் (Sprinkling) செய்யப்படும். • தொழிலாளர் முகாம்களில் உருவாகும் கழிவுநீர் 10 KLD STP மூலம் சுத்திகரிக்கப்படும்; • கழிவுகள் பிரித்து வசமாக்கப்பட்ட நீர் நிரல்களில் சேமிக்கப்பட்டு, அவற்றை அடிக்கடி உள்ளூர் நகராட்சி மற்றும் TNSPCB அங்கீகரிக்கப்பட்ட மறுசுழற்சி நிறுவனங்களுக்கு அனுப்ப வேண்டும்.

		• கழிவுநீர் மற்றும் திடக் கழிவுகள் சரியாக சுத்தம் செய்யப்படாவிட்டால், அருகிலுள்ள விவசாய நிலங்கள் மற்றும் நீர்நிலைகள் (நாளாக்கள், பாசை கால்வாய்கள், ஆறுகள்) மாசுபட்டு தாவர வளர்ச்சி மற்றும் விலங்குகளின் வாழிடத்தையும் பாதிக்கும்.	
6.	நீர் மற்றும் புவியியல் தாக்கங்கள்	தொழிலாளர் முகாம்களில் உருவாகும் கழிவுநீரை சரியான முறையில் மேலாண்மை செய்யாவிட்டால், அருகிலுள்ள நீர்நிலைகள் (ஆறுகள், கால்வாய்கள், பாசை கால்வாய்கள்) மாசுபடும். இந்த மாசுபாடு அதிக ஊட்டச்சத்து சுமையை (nutrient load) உருவாக்கி, நீர்நிலைகளில் யூட்ரோபிகேஷன் (eutrophication) ஏற்படுத்தும். இதனால் நீரின் ஓட்ட அமைப்பும் சுழற்சியும் பாதிக்கப்படும். மேலும், நீர் ஆவியாகும் (evaporation) மற்றும் நிலத்தில் ஊடுருவுதல் (infiltration) வீதங்களின் மாற்றத்தால் நிலத்தின் ஈரப்பதம் குறைந்து, மண் வளம் பாதிக்கப்படும்.	**குறைக்கும் நடவடிக்கைகள்:** • தொழிலாளர் முகாம்களில் உருவாகும் கழிவுநீர் **10 KLD திறன் கொண்ட STP** மூலம் சுத்தம் செய்யப்படும். • சுத்திகரிக்கப்பட்ட நீர் திட்டப்பகுதியில் **தூசி கட்டுப்பாட்டிற்காக தண்ணீர் துளைத்தல் (sprinkling)** பணிகளில் பயன்படுத்தப்படும். • எந்தவித கழிவுநீரும் ஆறுகள், கால்வாய்கள் அல்லது பாசை கால்வாய்களில் நேரடியாக வெளியேறாது என்பதை உறுதி செய்யப்படும்.

7.	போக்குவரத்து மேலாண்மை மற்றும் தூசி கட்டுப்பாடு	**சுற்றுச்சூழல் தாக்கங்கள்:** வாகனங்கள் அதிகமாகச் சென்றால் தூசி அதிகரிக்கும். தூசி அதிகரிப்பால் காட்சி தடை (visibility reduction) ஏற்பட்டு, விபத்துகள் ஏற்படும் அபாயம் அதிகரிக்கும்.	**நடவடிக்கைகள்:** • வாகனங்கள் வாகன வேகம் <15 கி.மீ/மணி ஆக கட்டுப்படுத்தப்படும்; வேகக் கட்டுப்பாடு பணி வாலர்கள் மூலம் உறுதி செய்யப்படும். • வாகன போக்குவரத்து staggered manner (படி படியாக) நடத்தப்படும். • தூசி கட்டுப்பாட்டிற்காக காலாண்டு முறையில் தண்ணீர் துளைத்தல் (periodic water sprinkling) செய்யப்படும். • திட்டப்பகுதியில் உள்ள சாலைகள் (asphalt) சரியான முறையில் பராமரிக்கப்பட்டு, தூசி வெளியேறும் அளவு குறைக்கப்படும்.
8.	திட மற்றும் ஆபத்தான கழிவு மேலாண்மை	**சுற்றுச்சூழல் தாக்கங்கள்:** கட்டுமானப் பணிகளின் போது உருவாகும் திடக் கழிவுகளில் இடிபாடுகள் (debris), உலோகச் சுரண்டல்கள் (metal scrap), காலியான வண்ணப் பைன்ட் கான்கள் (empty paint cans) அடங்கும். தொழிலாளர் குடியிருப்புகளில் உருவாகும் நகராட்சி திடக் கழிவு (municipal solid waste) சுற்றுப்புறத்தில் அசுத்தத்தை ஏற்படுத்தும். தவறான வசிப்பினால் லீச்சேட் (leachate) உருவாகி, வளரும் நீர் தரம் பாதிக்கப்படும்.	• நடவடிக்கைகள் மற்றும் குறைக்கும் நடவடிக்கைகள்: • கட்டுமானக் கழிவுகள் (இடிபாடுகள், உலோகச் சுரண்டல்கள், காலி பைன்ட் கான்கள்) தொடர்ந்து பிரிக்கப்படும்: • இடிபாடுகள் → நிலம் சமப்படுத்தல் மற்றும் சாரல பரப்பில் பயன்படுத்தப்படும். • உலோகச் சுரண்டல்கள் → மூலப்பொருளாக மறுசுழற்சிக்காக சேமிக்கப்படும். • காலியான பைன்ட் கான்கள் → அங்கீகரிக்கப்பட்ட மறுசுழற்சி நிறுவனங்களுக்கு (authorized recyclers) அனுப்பப்படும். • நகராட்சி திடக் கழிவுகள் உயிரியல் (organic) மற்றும் அஉயிரியல் (inorganic) பகுதியாக பிரித்து, TNPCB அங்கீகரிக்கப்பட்ட மறுசுழற்சி நிறுவனங்களுக்கு அனுப்பப்படும்.
B. பையல் ஓட்டு கட்டம்			

1.	காற்று மாசு மற்றும் சத்த மேலாண்மை	காற்று மாசு (Air Pollution) சுற்றுச்சூழல் தாக்கங்கள்: பாய்லர்கள் (Boilers), செயல்முறை (Process), வசதி (Storage), மூலப்பொருட்கள் மற்றும் தயாரிப்புகள், வாகன போக்குவரத்து, டீசல் ஜெனரேட்டர்கள் (DG sets) போன்றவற்றில் வாயு மற்றும் தூசி (gaseous & fugitive emissions) உண்டாகும்.	நடவடிக்கைகள் / குறைக்கும் நடவடிக்கைகள்: • ESP (Electrostatic Precipitator) மூலம் சுத்திகரிப்பு: திறன் 99.80%. 100 TPH பாய்லர் மூலம் வெளியேறும் வாயு, 70 மீட்டர் உயர RCC சிம்மி மூலம் சுத்தமாக வெளியேற்றப்படும். • தொழிலாளர் பகுதி மற்றும் சுற்றுப்புறத்தில் 4.67 ஹெக்டேர் பசுமை வளப்பரப்பு (green belt) உருவாக்கப்பட்டுள்ளது; இது காற்று மாசு மற்றும் சத்தத்தை குறைக்கும்.
2.	சத்தம்	**சுற்றுச்சூழல் தாக்கங்கள்:** நீண்ட காலம் அதிக சத்தத்தில் பணியாற்றுவதால் தூக்கக் குறைவு, மன அழுத்தம், உடல் சோர்வு மற்றும் பணித்திறன் குறைவு ஏற்படும்.	நடவடிக்கைகள் / குறைக்கும் நடவடிக்கைகள்: • நீராவி குழாய்கள் (steam lines), கம்பிரஸ்டு ஏர் குழாய்கள் (compressed air lines) மற்றும் அதிக அழுத்த உபகரணங்களில் சத்தம் குறைக்கப்படும்.

3.	நீர் தரம் மற்றும் மேலாண்மை	**சுற்றுச்சூழல் தாக்கங்கள்:** Spent wash, கழிவுநீர் (sewage), மற்றும் மரழநீர் ஓட்டம் (storm water runoff) நிலத்தடி நீரை மாசுபடுத்தும் அபாயம் மற்றும் சுற்றுப்புற வாழ்வினருக்கு பாதிப்பு ஏற்படுத்தும்.	**நடவடிக்கைகள் / குறைக்கும் நடவடிக்கைகள்:** • தொழிலாளர் கழிப்பரங்கள்: • 20 KLD அளவில் உருவாகும் வீட்டு கழிவுநீர் STP மூலம் சுத்தம் செய்யப்படுகிறது. • சுத்தமான நீர் திட்டப்பகுதியில் தண்ணீர் துளைத்தல் / பயன்பாட்டிற்கு பயன்படுத்தப்படும். **செயல்பாட்டு கட்டம் (Operational Phase):** • Boilers blowdown, WTP reject, ஆவிக்குழாய் கழுவுதல் போன்ற செயல்களில் 225 KLD அளவில் கழிவுநீர் உருவாகும். • இதை 300 KLD திறன் கொண்ட ETP மூலம் சுத்தம் செய்து பசுமை பரப்பில் பராமரிப்பிற்கு பயன்படுத்தப்படுகிறது. Distillery effluent மேலாண்மை: • Distillery பகுதியில் 1880 KLD effluent (spent lees மற்றும் MEE condensate உட்பட) 2000 KLD திறன் கொண்ட Condensate Polishing Unit மூலம் சுத்தம் செய்யப்படுகிறது. • சுத்தமான நீர் மீண்டும் செயல்முறையில் (process reuse) பயன்படுத்தப்படுகிறது.. **Spent Wash செயலாக்கம்:** • தினசரி 1900 KLD அளவில் உருவாகும் Spent Wash Decanter மூலம் Thin Slop மற்றும் Distillers Wet Grains with Solubles (DWGS) ஆக பிரிக்கப்படுகிறது. • Thin Slop → MEE (Multiple Effect Evaporator) மூலம் Concentrate செய்யப்படுகிறது. • Concentrated Slop மற்றும் DWGS சேர்க்கப்பட்டு Wet Cake உருவாக்கப்படுகிறது.

			• Wet Cake மற்றும் மழைநீர் மேலாண்மை • • Wet Cake மேலாண்மை: • Wet Cake உலர்த்தப்பட்டு Distillers Dried Grains with Solubles (DDGS) ஆக மாற்றப்படுகிறது. • இது மாடு மற்றும் மீன் உணவாக விற்பனை செய்யப்படுகிறது. • மழைநீர் மேலாண்மை: • Proper Storm Water Network அமைக்கப்பட்டு, மழைநீர் ஓட்டம் (runoff) சரியாக சேகரிக்கப்படுவதை உறுதி செய்யப்படுகிறது. • 47000 KL திறன் கொண்ட Rainwater Harvesting Pond கட்டப்பட்டு, சேகரிக்கப்பட்ட நீர் தொழில்நுட்ப செயல்முறைகளில் மீண்டும் பயன்படுத்தப்படுகிறது. • நீர் மறுசுழற்சி மற்றும் கழிவு நீர் மேலாண்மை முறையாக நடாத்தப்படுகிறது, இதனால் சுற்றுச்சூழல் பாதிப்பு குறைக்கப்படுகிறது. • தடைகள் ஏற்படும் இடங்களில் விரிவான நீர் வழி அமைப்புகள் (barriers) கட்டப்படலாம், மழைநீர் மற்றும் ஓட்ட நீர் கட்டுப்பாட்டிற்காக..

		ஊட்டச் சுழற்சி மற்றும் கழிவு மேலாண்மை **சுற்றுச்சூழல் தாக்கங்கள்:** • ஊட்டச் சுழற்சி (nutrient cycles) மற்றும் தாவர வளர்ச்சி பாதிக்கப்பட்டால், உயிரினங்கள் உயிரியல் அழுத்தம் (respiratory stress), உணவு குறைவு மற்றும் வாழிட நாசம் ஏற்படும். • தொழிலாளர் பகுதி மற்றும் சுற்றுப்புறத்தில் கழிவு நீர் (sewage/effluent) மற்றும் திடக் கழிவு (solid waste) சரியாக சுத்தம் செய்யப்படாவிட்டால்: • அருகிலுள்ள விவசாய நிலங்கள் மாசுபடும். • கொள்முதல் நீர் வளங்கள், நீர் நிரலங்கள் மற்றும் நதிகள் மாசுபட்டு நீர் தரம் பாதிக்கப்படும். • பைடிகள் மற்றும் பிற உயிரினங்களின் வளர்ச்சி குறைந்து, சுற்றுச்சூழல் சூழல் பாதிக்கப்படும். **குறைக்கும் நடவடிக்கைகள் / தடுப்பு நடவடிக்கைகள்**: கழிவு நீர் மற்றும் திடக் கழிவுகளை முறையாகச் சுத்திகரிக்க வேண்டும். தொழிலாளர் முகாம்கள் மற்றும் திட்டப்பகுதியில் STP/ETP போன்ற உபகரணங்களை நிறுவி, நீர் மறுசுழற்சி செய்யப்பட வேண்டும். திடக் கழிவுகள் மறுசுழற்சி / களிமண் பரப்பில் சரியான முறையில் பயன்படுத்தப்பட வேண்டும். சுற்றுப்புற வாழ்விடங்கள், விவசாய நிலங்கள் மற்றும் நீர்நிலைகள் பாதிக்கப்படாதவாறு கட்டுப்பாட்டு நடவடிக்கைகள் மேற்கொள்ளப்பட வேண்டும்.	திட்டப்பகுதி சுற்றுச்சூழல் மற்றும் கழிவு மேலாண்மை **சுற்றுச்சூழல் மற்றும் உயிரியல் தாக்கங்கள்:** திட்டப்பகுதியில் உள்ள RF (Reserved Forest / காப்புக்காடு) மற்றும் சுற்றுப்புறம் ஒழுங்காக பராமரிக்கப்படவில்லை என்றால், காற்று மற்றும் சத்தம் அதிகரித்து, உயிரியல் சூழல் பாதிக்கப்படும். தொழிலாளர் கழிவுநீர் மற்றும் effluent சரியான முறையில் சுத்தம் செய்யப்படாவிட்டால் நீர் மற்றும் நிலம் மாசுபடும். **நடவடிக்கைகள் / குறைக்கும் நடவடிக்கைகள்:** Effluent மற்றும் கழிவு நீர் மேலாண்மை: தொழிலாளர் கழிவுநீர் 20 KLD STP மூலம் சுத்தம் செய்யப்படுகிறது. செயல்முறை effluent 300 KLD திறன் கொண்ட ETP மூலம் சுத்தப்படுத்தப்படுகிறது. Distillery effluent 2000 KLD திறன் கொண்ட CPU மூலம் சுத்தப்படுத்தப்படுகிறது. **திடக் கழிவு மேலாண்மை:** • கழிவுகள் மூடிய தட்டு (closed bins) மற்றும் நீர் நிரல்களில் சேகரிக்கப்படும். • சேகரிக்கப்பட்ட கழிவுகள் நகராட்சி மற்றும் TNPCB அங்கீகரிக்கப்பட்ட மறுசுழற்சி நிறுவனங்களுக்கு அனுப்பப்படும். • எந்தவித கழிவு நீர் அல்லது திடக் கழிவும் நேரடியாக நதிகள், கால்வாய்கள் மற்றும் விவசாய நிலங்களுக்கு செல்லக்கூடாது. • பசுமை வளப்பரப்பு மற்றும் உயிரியல் மேலாண்மை: • திட்டப்பகுதியில் 34.64% பசுமை வளப்பரப்பு (green belt) உருவாக்கப்படும். • இதனால் பறவைகள், அணில்கள் மற்றும் பூச்சிகள் போன்ற உயிரினங்களின் சுற்றுச்சூழல் இயக்கம் அதிகரிக்கும். • காற்று மாசு, சத்தம் மற்றும் சுற்றுச்சூழல் பாதிப்புகள் குறைக்கப்படும்.

		Operation Phase – சுற்றுச்சூழல் மற்றும் மேலாண்மை நடவடிக்கைகள் (Bullet Point வடிவில்)	
4.	திடக் கழிவு மேலாண்மை	**உருவாகும் கழிவு வகைகள்:** • நகராட்சி திடக் கழிவு (Municipal Solid Waste) • ஈஸ்ட் கெடு (Yeast Sludge) • CPU-இல் உருவாகும் சாளி (Sludge from CPU) • பாய்லர் கோமில் உருவாகும் சாம்பல் (Ash from Boiler) • DDGS (Distillers Dried Grains with Solubles) • பயன்படுத்தி முடிந்த எண்ணெய் மற்றும் எண்ணெய் கிழிந்த பருத்தி கழிவு (Used Oil & Oil-soaked Cotton Waste)	**திடக் கழிவு மேலாண்மை – நடவடிக்கைகள் மற்றும் பயன்பாடு** **வீட்டு கழிவு:** • வாசகரிக்கப்பட்ட வீட்டு கழிவு உயிரியல் (organic) மற்றும் அஉயிரியல் (inorganic) பகுதிகளாக பிரிக்கப்பட்டு, நகராட்சிக்கு (local municipality) அனுப்பி, சரியான சுத்திகரிப்பு செய்யப்படும். **Yeast Sludge & CPU Sludge:** • Yeast Sludge (94 TPD) மற்றும் CPU Sludge (100 TPD) கலந்தால் உழவர் உரமாக (manure) பயன்படுத்தப்படும். **DDGS (Distillers Dried Grains with Solubles):** • 300 TPD அளவு Distillery-இல் உருவாகும் DDGS மாடு உணவாக (cattle feed) வழங்கப்படும். **Boiler Ash:** • Used Oil & Cotton Waste: • பயன்படுத்திய எண்பணய் (lubricant) சுருக்கி மீண்டும் பயன்பாட்டிற்கு கொண்டு வரப்படும். • எண்ணெய் நரிந்த பருத்தி கழிவு Boiler start-up / உணர்வு நடவடிக்கைகளில் பயன்படுத்தப்படும்.
6.	அபாயங்கள் மற்றும் தொழிலாளர் சுகாதாரம் மற்றும் பாதுகாப்பு	சுற்றுச்சூழல் / மனித உடல் தாக்கங்கள்: தொழிலாளர்கள் மற்றும் சுற்றுப்புற கிராமவாசிகள் சுகாதார பாதிப்புகளை சந்திக்கலாம்.	**தொழிலாளர் சுகாதாரம் மற்றும் பாதுகாப்பு நடவடிக்கைகள் (Occupational Health & Safety Measures):** **பாதுகாப்பு உபகரணங்கள் (PPEs):** • பாதுகாப்பு காலணிகள் (safety shoes) • கண் கண்ணாடிகள் (goggles) • முகக்கவசங்கள் / முகமூடி (respirators / masks) • ஆபர்கள் (aprons)

			பாதுகாப்பு உபகரணங்கள் (PPEs): • கைவழிகள் (hand gloves) • காது பாதுகாப்பு (ear mufflers) • மூக்கு மாசு தடுப்பு (nose masks) • சுகாதார வசதிகள் மற்றும் முதற்கட்ட சிகிச்சை: • தொழிலாளர் சுகாதார மையம் (Occupational Health Center) பராமரிப்பு • முதற்கட்ட சிகிச்சை பெட்டிகள் (First Aid Kits) கிடைக்கும் **பயிற்சி மற்றும் விழிப்புணர்வு**: **450 தொழிலாளர்களுக்கு:** • தீயணைப்பு பயிற்சி (firefighting training) • PPE பயன்படுத்தும் பயிற்சி • அவசர நிகழ்வுகளுக்கான தயார் நடவடிக்கை (emergency preparedness) • முதற்கட்ட சிகிச்சை பயிற்சி • கண்வணாட்டு விளக்கங்கள் மற்றும் போஸ்டர்கள் மூலம் சுகாதாரம் மற்றும் பாதுகாப்பு விழிப்புணர்வு ஏற்படுத்தப்படும் • சுற்றுச்சூழல் கண்காணிப்பு: • பணியிடத்தில் காற்று தரம் (Indoor air monitoring) • தூசி (particulate matter) • VOCs (volatile organic compounds) • அனைத்தும் தொடர்ந்து கண்காணிக்கப்படும் **மருத்துவ பரிசோதனைகள் மற்றும் கண்காணிப்பு:** • தொழிலாளர்களுக்கு முன் மற்றும் பின் (pre & post medical check-ups) மருத்துவ பரிசோதனைகள் செய்யப்படும் • பருவகால மருத்துவ பரிசோதனைகள் (periodical medical check-up) ஆண்டு ஒருமுறை நடத்தப்படும் • தொழிலாளர் சுகாதார கண்காணிப்பு தொடர்ச்சியாக நடக்கும்

			தொழிலாளர் சுகாதாரம் மற்றும் பாதுகாப்பு – Health Surveillance Programme • Health Surveillance Programme கீழ்காணும் பரிசோதனைகள் (medical check-ups) உட்பட உள்ளது: • Lung Function Test (உதிரச்சுவாச செயல்பாடு பரிசோதனை) • Radiology – X-ray (கதிரியக்க பரிசோதனை) • Pulmonary Function Test (சுவாசக் கருவி செயல்பாடு பரிசோதனை) • Audiometric Test (காது ூ்ம் திறன் பரிசோதனை) • செயல்முறை பகுதிகளில் சீரான காற்றழுத்தம் மற்றும் வாசிப்பு (ventilation system) அமைக்கப்படும் • தொழிலாளர் பகுதிகளில் முன்னெச்சரிக்கை நடவடிக்கைகள் மற்றும் பாதுகாப்பு உபகரணங்கள் (PPEs) வழங்கப்படும் • தொழிலாளர் பாதுகாப்பு மற்றும் சுகாதார அபாயங்கள் குறைக்க நடவடிக்கைகள் உறுதி செய்யப்படும்
7.	நீர் வளம் மற்றும் புவியியல்	**நீர்வள மற்றும் நிலத்தடி நீர் மீது தாக்கங்கள்:** • நீர் அட்டவரணி (groundwater table) குறைவாகும் / பாதிக்கப்படும் • குடிநீர் அழுத்தம் அதிகரிக்கும் (drinking water supply pressure affected) • கழிவு நீர் / effluent தவறாக நிர்வகிக்கப்பட்டால்: • நிலம் மற்றும் நிலத்தடி நீர் மாசுபடும் • நதிகள், கால்வாய்கள் (nalas) மற்றும் பாசன கால்வாய்களில் மாசுபாடு ஏற்படும்	**நீர் தமலொண்சம நடவடிக்கைகள் (Water Management Measures)** **கோரி நீர் வடிகால் மற்றும் நதிகள்:** • Cauvery River-இல் Dug Well அமைத்து நீர் எடுக்கப்படும் • திட்டப்பகுதியில் 0.60 கி.மீ தொலைவில் இருக்கும் • நிலத்தடி மற்றும் மண் மேற்பரப்பு நீர் ஒருங்கிணைப்பு: • Conjunctive Use மூலம் நிலத்தடி நீர் மட்டம் உயர்த்தப்படும் • நீர் தரம் பாதுகாக்கப்படும் • மழைநீர் சேமிப்பு திட்டம் (Rainwater Harvesting Plan): • கூரர நீர் ஓட்டம் (roof runoff) மற்றும் மண் மேற்பரப்பு ஓட்டம் (surface runoff) சேகரிக்கப்படும் • 47,000 KL திறன் கொண்ட Rainwater Harvesting Pond உருவாக்கப்படும்

		நீர் சாரலக்கள் மற்றும் மரழநீர் மேலாண்மை (Irrigation Canals & Storm Water Management) **நீர் சாரலக்கள் (Irrigation Canals):** சரியான மேலாண்மை இல்லாதால் மாசுபாடு ஏற்படும் இதனால் நீர் தரம் குறைவு மற்றும் பாசனப் பிரச்சினைகள் ஏற்படும் **மரழநீர் மேலாண்மை (Storm Water Management):** சரியான முறையில் செயல்படாவிட்டால் நிலத்தடி நீர், மண் மேற்பரப்பு நீர் மற்றும் மரழநீர் ஓட்டம் பாதிக்கப்படும் தடுப்பு நடவடிக்கைகள் மூலம் நீர் முழுமையாக பராமரிக்கப்படும் **Operation Phase நடவடிக்கை:** நீர் மேலாண்மை நடவடிக்கைகள் முழுமையாகச் செயல்பட வைக்கப்படும் நிலத்தடி நீர், மேற்பரப்பு நீர் மற்றும் மழைநீர் ஒவ்வொன்றும் பாதுகாக்கப்படும	**மழைநீர் சேமிப்பு (Rainwater Harvesting Pond) நடவடிக்கைகள்** **RWH Pond பயன்பாடு:** • வசகரிக்கப்பட்ட நீர் மறு பயன்பாட்டிற்காக (recycled water use) RWH Pond-ல் சேமிக்கப்படும் • Trenching மற்றும் சேமிப்பு: • திட்டப்பகுதியில் 1.5 மீட்டர் ஆழத்தில் trenching செய்து storm water சேகரிக்கப்பட்டு RWH Pond-ல் கொண்டு செல்லப்படும் • முதன்மை சிகிச்சை (primary treatment) மூலம் நீர் சுத்தப்படுத்தப்பட்டு மீண்டும் பயன்பாட்டிற்கு அனுப்பப்படும் • பாதுகாப்பு: • எந்தவொரு process water இலும் நேரடி நீர் வளங்களில் (groundwater / surface water) சேர்க்கப்படாது
8.	சமூக-அரசியல் சூழல்	நெறிமுறை தாக்கங்கள்	**நிரந்தர வேலை வாய்ப்பு:** • திட்டத்தின் செயல்பாட்டால் உள்ளூர் மக்கள் நிரந்தர வேலை வாய்ப்புகள் பெறுவர் • சமூக-அரசியல் நன்மைகள்: • சுற்றுப்புற மக்கள் சமூக மற்றும் பொருளாதார நிலை உயர்வு அடையும் **சுற்றுப்புற கிராமங்களில் பொருளாதார வளர்ச்சி:** • திட்டத்தின் செயல்பாடு சுற்றுப்புற கிராமங்களில் பொருளாதார செயல்பாடுகளை மேம்படுத்தும் • எதிர்பார்க்கப்படும் நன்மைகள் உள்ளன **சிறு தொழிலாளர் வளர்ச்சி**: • சுற்றுப்புறத்தில் சிறு தொழிலாளர் நபாருளாதாரம் மேம்படும் • இதற்கான நிதி ஆதரவுகள் மற்றும் நிறுவனம் வழிகாட்டல்கள் வழங்கும்

			நிதி ஆதரவு: • வங்கிகள் மூலம் திட்டத்தின் கீழ் சுற்றுப்புற மக்களுக்கு நிதி ஆதரவு வழங்கப்படும் **மாத்த வளர்ச்சி (Holistic Development):** • இதனால் சுற்றுப்புற பகுதிகளில் ஒட்டுமொத்த சமூக-பொருளாதார வளர்ச்சி ஏற்படும்
9.	எரிசக்தி வசமிப்பு நடவடிக்கைகள்	சூரிய சக்தி	**நெறிமுறை தாக்கம்:** • சூரிய சக்தி பற்பாடால் சுற்றுச்சூழல் மீது நேரடி மாசுபாடு குறையும் • பாரம்பரிய மின்சார உற்பத்தி குறைவு மூலம் காற்று மாசு குறையும் • சூரிய சக்தி நிறுவல் நடவடிக்கைகள்: • திட்டப்பகுதியில் உள்ள திறந்த இடங்கள்: 1 ஏக்கர் • குமாரமங்கலம் கிராமம், குளித்தரல் Taluk, கரூர் மாவட்டம், Sy. No. 67 – 0.98 ஏக்கர் கூடுதல் நிலம் பயன்படுத்தப்படும் • கூடுதல் நிலம் 34 மீட்டர் நீளத்தில் அமைக்கப்படும் **நன்மைகள்:** • திட்டத்திற்கான சில மின் சக்தி தேவைகளை சூரிய சக்தியால் பூர்த்தி செய்ய முடியும் • பாரம்பரிய மின்சார உற்பத்தியை குறைத்து சுற்றுச்சூழல் பாதுகாப்பு உறுதி செய்யப்படுகிறது

ES 4. சுற்றுச்சூழல் கண்காணிப்பு திட்டம் (Environmental Monitoring Plan)

கட்டுமா மற்றும் இயக்க நிரலக்களில் கண்காணிப்பு:

- இரண்டிலும் சுற்றுச்சூழல் கண்காணிப்பு திட்டம் கடுமையாக நடைமுறைப்படுத்தப்படும்
- கட்டுமான கட்டமைப்பு கண்காணிப்பு செலவு:
- ₹ 4,20,000/- வருடத்திற்கு
- இயக்க கட்டமைப்பு கண்காணிப்பு செலவு:
- ₹ 7,80,000/- வருடத்திற்கு
- அளவீட்டு மற்றும் தகவல் சமர்ப்பிப்பு:
- கண்காணிப்பு முடிவுகள் அளவீட்டு ரிப்போர்ட்கள் மற்றும் தேவையான தகவல்கள் முறையாக சமர்ப்பிக்கப்படும்

ஆறு மாதம் ஒருமுறை (Six-Monthly):

- சுற்றுச்சூழல் அங்கீகாரம் (Environmental Clearance – EC) நிபந்தனைகள் பின்பற்றப்படுவதை உறுதிப்படுத்தும் Compliance Report

மாதாந்திர (Monthly):

- Environmental Monitoring Reports
- சமர்ப்பிக்கப்படும் அதிகாரி: TNPCB மாநில அலுவலகம்

ES 5. கூட்டு ஆய்வுகள் (Additional Studies)

- **Hazard Identification and Risk Analysis (HIRA):**
    - M/s. GPEPL-இல் உள்ள Distillery Unit உற்பத்தி செயல்முறைகளில் விபத்F மற்றும் அபாWங்கரளக் கண்டறியும் கண்டறிதல் முறை:
    - ஆய்வு விளக்கங்கள் அட்டவணை வடிவில் சுட்டிக்காட்டப்பட்டுள்ளது பயன்பாடு:.

பையல் ஒட்டு	அபாய விளக்கம்	கட்டுப்பாட்டு நடவடிக்கைகள்
கச்சா னபாருள் வபாக்குவரத்F	வாகெத்தால் தாக்கம்	- நச்சு ஒட்டுநிலை ஓட்டஅமைதி கட்டுப்பாடு - கவனத்தைக் காட்டும் சிக்னல்கள் மற்றும் சிக்னேஜ் நிறுவல்
அடரக்கும் பெயல்முடற	இWந்திர சுற்றும் பகுதிகளால் உடல் காWம்	- இWந்திர காப்பீடு வழங்கல் - பயிற்சி னபற்ற நபர் நிWமெம்
கன்தையர் பெயல் ஒட்டு	இயந்திர பகுதிகளுடன் தொடர்பில் உடல் காயம்	- பணி பாதுகாப்பு காப்பு வழங்கல் - சுற்றுப்புறப் பகுதிகளுக்கும் பாதுகாப்பு
	உருவாக்கப்படும் விழுதுகள் மற்றும் விழுதல் அபாயம்	பிராக்டீஸ் பின்பற்றல் - பயிற்சி மற்றும் முறைமை
தானிய தெமிப்பிற்கு துடைக்கடல் (Dust Handling / Milling Operations)	தானியக் கிடங்குகளில் விபத்து, வெடிப்பு அபாயம்	- Explosion-proof Dust Collection System நிறுவல் - கருவிகளின் Bonding மற்றும் Grounding - Good Housekeeping நடைமுறை பின்பற்றல்

யன் டுத்Fதல்	மூச்சுக்குழாய் பாதிப்பு	- Dust respirator mask அணிதல் - Dust collection & exhaust system பயன்படுத்தல்
சுத்திய ஆடலயின் பெயல் ஒட்டு (Cleaning / Maintenance Operations)	இயந்திர சுற்றும் பகுதி காரணமாக காயம்	- இயந்திர காப்பீடு வழங்கல் பயிற்சி மற்றும் கண்காணிப்பு
எல்லடை இயந்திர பெயல் ஒட்டு (Boiler / Equipment Handling)	தேக்கர் காரணமாக ஏற்டும் இடர்ப்பு; தூசி மூலம் மூச்சுக்குழாய் பாதிப்பு; நிபாயிண்டுகளில் உடல் காயம்	-காப்பு அடை வழங்கல் - முகக்கவசம் அணிதல் (Dust mask) - பயிற்சி மற்றும் நிபுணர் கண்காணிப்பு
	தூசி மூலம் மூச்சுக்குழாய் பாதிப்பு	முகக்கவசம் அணிதல்
	நிப் பாயிண்டுகளால் உடல் காWம்	இயந்திர தாக்கத்தால் உடல் காயம் – பயிற்சி பற்றிய நபர் நியமனம்

பையல் ஒட்டு	**அபாய விளக்கம்**	**கட்டுப்பாட்டு நடவடிக்கைகள்**
	தீ அபாWம் – எரிக்கக்கூடிW தூசி காரணமாக	தூசி அகற்றும் இயந்திரங்கள் மற்றும் Dust Collection System உடன் தொடர்பான பாதுகாப்பு நடவடிக்கை:
னகாள்கலெ்களி ல் மாவுகரள வசமித்தல்	மூச்சுக்குழாய் பாதிப்பு – தூசி	மூச்சுக்குழாய் பாதிப்புக்கு எதிரான **முகக்கவசம் / Respirator Mask** பணி பாதுகாப்பு நடவடிக்கைகள்:
னபரிW வடங்க ளில் ஸ்டார்ச் கலப்பF	உWரத்தில் விழுதல் அபாWம்	சர்வீஸ் அச்சிறப்பு நபர்கள் மட்டும் பராமரிப்பு செய்கிறார்கள்
	மூச்சுத்திணற ல்	- **குறுகிய இடைவெளியில் தீவிரமான/துரிதமான பயிற்சி** (short-term intensive training) வழங்கப்படும். - பயிற்சி **முடிந்தவுடன்**, அந்த பணியாளர்கள்
ரசாயனங்கள்	மூச்சுத்திணறல், அனலர்ஜி – ஏ்ரசம்கள் காரணமாக	Respiratory mask வழங்கல்

வசர்த்தல்	வசதம் – னகார்வராசிவ் ரசாயனங்கள்	**Safety Gloves** (கையுறை கைகள்)
னநாதித்தல் கலில் னநாதித்தல் னசWல்மு ரற	பை உமிழ்வால் ஏற்படும் பாதிப்புகள் (Dust / Particulate Emission Impacts) மற்றும் தடுப்பு நடவடிக்கைகள்:	காற்வறாட்டம், அழுத்தக் குறியீட்டிகள், னதாழிலாளர் பாFகாப்பு உபகரணங்கள் (PPE), கட்டுப்பாட்டு பரிவசாதரெ மற்றும் கண்காணிப்பு, னபர்னமண்டர் கப்பல் னசWல்முரறயில் னதாழிலாளர்களுக்கு பயிற்சி
குறியீட்டுகள் மற்றும் அளவுகோல்கள்	தீ மற்றும் வெடிப்பு அபாயங்கள் – மூலத்தாலும் ஏற்படும் தாக்கங்கள்	கட்டுப்பாட்டு நடவடிக்ரகக்கள்) ஆபத்தான பகுதி வகைப்படுத்தல் தீ கண்டறிதல் அரமப்புகள் நிறுவல் தீ அரணக்கும் அரமப்புகள் – ஸ்பிரிங்க்லர் சிஸ்டம் (Fire suppression – இடத்தில் பணிWாற்றும் ஆபவரட்டர்கள் இருப்பு தீப்னபாறிகரள கட்டுப்படுத்தல் மற்றும் உணவு (feed) தரடகரள தெிWாக தெி னசWலில் ரவக்கக் கூடிW திறெ
	அதிக அழுத்தத்தால் ஏற்படும் அபாய விளக்கம்	அழுத்தத்ரத னவளியிடும் வால்வ் நிறுவப்படும்
	குழாய்/பைப் (Pipes) உள்ளே இருந்து எத்தோல் (Ethanol) ஆவி வெளியேறுவதால் தீ அபாயம்	கட்டுப்பாட்டு நடவடிக்கைகள் குழாய் பராமரிப்பு அசாதாரண கசிவு (leakage), வெடிப்பு அபாயம் மற்றும் உற்பத்தி தடை

		கால அடிப்படையில் மேற்கொள்ளப்படும் பராமரிப்பு

பையல் ஒடு	**அபாய விளக்கம்**	**கட்டுப்பாட்டு நடவடிக்கைகள்**
ரகWகப்ப டுத்தல் (Leakage) **தீ அபாயம் (Fire Hazard)**	கசிவு	மாற்றும் நடைமுறை பயிற்சி பெற்ற ஆபரேட்டர் கண்காணிப்பில், Receiver tank சரியான அளவில் பராமரிப்பு, கசிவு தடுப்பு ஏற்பாடு, வழங்கல்
	மிஞ்சாதெங்கள் / வதரவுள்ள இடங்களில் Hydrocarbon பராமரிப்பு	Hydrocarbon sensors நிறுவல், தீ தடுப்பு நடைமுறை பின்பற்றல்
அழுத்தம்/நவப்ப ணி ரல் அதிகரிப்பு (Overpressure / High Temperature) **நவப்ப நீர் / Steam குழாய் கசிவு (Hot Water / Steam Leak)** **உயர்நிலை வெப்பம் (Hot Surfaces)** **விழுதல் அபாயம் (Fall Hazard)** **அதிக சத்தம் (High Noise)**	குழாய்/உபகரணங்களில் அழுத்தம் அதிகரிப்பு, வதால்வி காரணமாக வெடிப்பு	சரிபார்த்தல் மற்றும் பதிவு; Pressure gauges காலக்கெடு பராமரிப்பு; Pressure relief valve நிறுவல் மற்றும் பராமரிப்பு; Periodic inspection ஆழிலாளர்களால்
	எரியும் வசதி	குழாய் தள வழி பராமரிப்பு; PPE வழங்கல்
	பகுதியின் உள்நிலை வெப்பத்துக்கு தொடர்பு	வெப்ப பாதுகாப்பு மற்றும் பணி பாதுகாப்பு நடைமுறை
	உயரமான தளங்கள் / மரணமுரண்கள்	எல்லா தளங்களுக்கு Handrails வழங்கல், பாதுகாப்பு நடைமுறை பின்பற்றல்
	பாய்லர் ஆபரேட்டர்கள் / இயந்திரங்கள்	காது பாதுகாப்பு (Ear Protection) வழங்கல்; PPE பின்பற்றல்
பையல் ஒடு	**அபாய விளக்கம்**	**கட்டுப்பாட்டு நடவடிக்கைகள்**

மிக்சாரம் மற்றும் உற்பத்தி இயந்திர செயல்பாடு	தீ அபாயம்	தானியங்கி தீ அணைக்கும் அமைப்புகள் (Automatic Fire Extinguishing Systems) நிறுவல் மற்றும் பராமரிப்பு; அப்போதைய நிபந்தனை பரிமாற்றம்; மண்ணுக்கட்டு வாள்கள் பராமரிப்பு
	வெப்பம், தீப்பிடிக்கும் பொருட்கள்	பயிற்சி பெற்ற நபர்கள் மட்டுமே செயல்பாடு; திட்டமிடப்பட்ட பராமரிப்பு மற்றும் தடுப்பு நடவடிக்கைகள்
	நியமமாெ பணிகள் மற்றும் பராமரிப்பு போது விழுதல் அபாயம்	"உயரமான தளங்கள் / இயந்திரங்கள் அருகே விழுதல் அபாயம்"

Activity	Hazard description	Control measures
	பணிகள் மற்றும் பராமரிப் பு	
தரநிரல் பரிவசாதரெ (Process water treatment) மற்றும் ETP (Effluent Treatment Plant) ஆல்வகங்களில் ரசாயனங்களை பயன்படுத்துதல்	மூச்சில் னசல்வதால் குளறுபாடு (Irritant in case of inhalation), வதால் மற்றும் கண்களில் காட்வசால்	பணியாளர்களுக்கு **பாதுகாப்பு கண்ணாடிகள் (Goggles)**, **அப்ரான்கள் (Aprons)**, **பாதுகாப்பு காலணிகள் (Safety shoes)** மற்றும் **பாதுகாப்பு கைவிரல்கள் (Hand gloves)** வழங்கப்படும்

ES 6. திட்ட நன்மைகள் (Project Benefits)

- உதவி செய்யும் கிராமங்கள்: M/s GPEPL அருகிலுள்ள கிராமங்களில் உள்ள திறமையான, அரர-திறமையான மற்றும் திறமையற்ற பணிWாளர்கள் திட்டத்திற்கு நேரடி நன்மை பெறுகின்றனர்.
- சமூக-நற்பாருளாதார வளர்ச்சி: இதன் மூலம் சுற்றியுள்ள மக்கள் சமூக மற்றும் நற்பாருளாதார முன்னேற்றம் அடைகிறார்கள்.
- வேலை வாய்ப்புகள்: திட்டத்தில் 450 நேரடி வேலை வாய்ப்புகள் உருவாகும்.

- **வமலாண்ரம ஆதரவு:** திட்டத்தில் உருவாகும் வசதி மற்றும் சேவைகள் மூலம் சுற்றுப்புற மக்களுக்கு, உள்ளூர்

- சமூக நலத்திட்டங்கள்: திட்டம் சுற்றுப்புற மக்களுக்கு நிதியுதவி, ஊட்டச்சத்து உதவி, சுகாதார சபைகள், கல்வி திட்டங்கள், மருத்துவ முகாம்கள் மற்றும் விவசாய உதவி வழங்கும்.
- பச்சை வளம் / Green Belt: 4.67 ஏக்கர் பரப்பளவில் பச்சை வளம் உருவாக்கப்படும், இது திட்ட பரப்பளவின் 34.64% ஆகும்.
- உள்ளூர் முன்னேற்றம்: பச்சை வளம் மற்றும் சமூக நலத்திட்டங்கள் மூலம் உள்ளூர் மக்களின் வாழ்க்கை தரம் உயர்வும், நில வருவாய், சுகாதார வசதி, கல்வி வாய்ப்புகள் மற்றும் போக்குவரத்து அடிப்படை வசதிகள் மேம்படும்.
- பொதுவான தாக்கம்: திட்டத்தின் செயல்பாடு சமூக-நற்பாருளாதார வளர்ச்சியை ஊக்குவித்து, சுற்றுப்புற பகுதிகளில் நன்மை ஏற்படுத்தும்.

ES 7. சுற்றுச்சூழல் தமலொண்சம திட்டம் (Environment Management Plan – EMP)

- EMP செயல்பாடு: M/s GPEPL சுற்றுச்சூழல் மேலாண்மை திட்டம் (EMP) திட்ட செயல்பாடுகள், பராமரிப்பு மற்றும் கண்காணிப்புகளுடன் இணைந்து நடைமுறைப்படுத்தப்படும்.
- மொத்த திட்ட செலவு: ₹ 600 தகொடி (Capital + Implementation)
- EMP முதலீட்டு செலவு: ₹ 4500 லட்சம் – நிறுவல் மற்றும் தொடக்க நடவடிக்கைகள்
- EMP மறு செலவு (Recurring cost): ₹ 203 லட்சம்/வருடம் – பராமரிப்பு, கண்காணிப்பு, கணக்கெடுப்பு மற்றும் மேம்பாட்டு நடவடிக்கைகள்

EXECUTIVE SUMMARY

ENGLISH

ES

EXECUTIVE SUMMARY

ES 1. Project Description

Ms. Greenergy Pure Ethanol Pvt Ltd (GPEPL) promoted by Ms. Greenergy Bio Ethanol Pvt Ltd (GBEPL) belonging to Ms. Greenergy Group is a private limited company incorporated on June 29, 2022. GBEPL, the holding company for the Ethanol operations of Greenergy 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 Greenergy 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 Greenergy 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 Greenergy 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 Greenergy 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,

<table>
<tr><th>Sl. No</th><th>Items</th><th>Particulars</th></tr>
<tr><td></td><td></td><td>72/2 of Kumaramangalam Village, Kulithalai Taluk, Karur District, Tamil Nadu State</td></tr>
<tr><td>6.</td><td>Category of the Project</td><td>Category A - 5(g), 1(d)</td></tr>
<tr><td>7.</td><td>Extend of Land</td><td>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)</td></tr>
<tr><td>8.</td><td>Latitude & Longitude</td><td>10°54'10.17"N, 78°28'30.85"E</td></tr>
<tr><td>9.</td><td>Manpower</td><td>During Construction: 100 No’s
During Operation: 450 No’s</td></tr>
<tr><td>10.</td><td>Water Demand and Source</td><td>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></td></tr>
<tr><td>11.</td><td>Power Supply & Requirement</td><td>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.</td></tr>
<tr><td>12.</td><td>No. of working days</td><td>Total number of working days - 330 days</td></tr>
</table>

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-Saccarification Process, Fermentation Section,

Multi Pressure Vaccum 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 Ayynur 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 µs/cm (SW-2) to 755 µs/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 µs/cm (GW-4) to 2554 µs/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/km^2. All the stream coursed 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), *Borasus 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. ❖ Asphalting 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 SO_2, NOx, 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/m^3 with incremental value of 0.14 µg/m^3 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/m^3 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 Exposure to enzymes	Respiratory mask will be provided.
	Damage to skin due to use if 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.

Chapter
1

INTRODUCTION

1.1 Purpose of the report

As per EIA notification 2006 dated 14th September 2006 and its subsequent amendments, all project activities in the Schedule including new projects or expansion and modernization of existing projects or activities or change in product mix as specified will require Prior Environmental Clearance from the MOEF&CC.

As per EIA Notification, 2006 and its amendments, the proposed expansion project is listed under schedule 5(g) and 1(d) and categorized as 'A' which requires preparation of EIA/EMP Report for issue of Environmental Clearance to the project. In this context, the EIA/EMP report is prepared to know the existing status of the environment, to assess the impacts of the proposed project activity and suggest mitigation measures to be implemented.

1.2 Identification of project & project proponent

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

Greenergy Group is a diversified group having business interest in the field of Renewable Energy, Ethanol Production, Real Estate and Poultry Farming. Mr. Syed Fahad, the Managing Director of M/s Greenergy Pure Ethanol Pvt Ltd (GPEPL) has more than 15 years of experience in developing, executing and operating different projects.

In this regard, M/s Greenergy Pure Ethanol Pvt Ltd (GPEPL) has proposed for establishment of 600 KLD Grain based Distillery at 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 Greenergy Pure Ethanol Pvt Ltd (GPEPL). The project cost is 600 Crores.

1.2 Brief description of nature, size, location of the project and its importance

1.3.1 Nature, size & location of the project

The proposed project is a grain-based distillery producing Ethanol with Zero Liquid Discharge. The project involves establishment of 600 KLD Grain based Distillery along with 13 MW Co-Generation Unit. The details of products and by-products are as follows;

Table 1.1 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%)

The project site is located 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 with an extent of 33.35 Acres. The GPS coordinates of the project site is 10°54'10.17"N, 78°28'30.85"E.

1.3.2 Importance to the Country or region

The industrial alcohol is used in most of the industries such as chemical industries in the manufacture of primarily the basic carbon-based products like Acetic Acid, Butanol, Butadiene, Acetic Anhydride, Vinyl acetate, PVC etc. Pharmaceutical industries for manufacturing of insulin, antibiotics, tonics and several other essential bulk drugs and finished formulations, Extra-Neutral-Alcohol (ENA) is also useful for manufacture of cosmetics and perfume as well as in petroleum based products, etc. The industrial alcohol is the base or raw material for the most of these industries.

Therefore, M/s Greenergy Pure Ethanol Pvt. Ltd. has proposed for establishment of 600 KLD Grain Based Distillery Unit & 13 MW Co-generation Unit at Kumaramangalam Village, Kulithalai Taluk, Karur District, Tamil Nadu State.

The total investment of the project is 600 Crores. The total number of employment generation estimated for the proposed project is as follows;

Table 1.2 Employment potential

Sl. No.	Project phase	Total employment (Nos.)
1	Construction Phase - Temporary	70
2	Construction Phase - Permanent	30
3	Operation Phase - Temporary	300
4	Operation Phase - Permanent	150

1.3 Scope of the study

As per EIA Notification 2006 and its subsequent amendments, the scoping of the project is as follows;

Table 1.3 Regulatory scoping of the project

Sl. No. in the schedule	Threshold Limit as per the Notification	Applicability of General Conditions
5(g) Distillery & 1(d) Thermal Power Plant	Proposed project is "Establishment of 600 KLD Grain based Distillery along with 13 MW Co-Generation Unit" which is > 100 KLD, hence project is categorized as 'A' and application has to be submitted to MOEF&CC for issue of EC	No

Table 1.4 Status of obtaining ToR approval for the project

PARIVESH Proposal No.	Date of application submitted for ToR approval	MoEF&CC TOR Letter no. & Date	EAC Meeting Ref:	Remarks
IA/TN/IND2/567778/2026	12.02.2026	File No.: IA-J-11011/46/2026-IA-II Dated: 16/02/2026	Online Standard ToR	The TOR Copy is attached as Annexure – 1.

1.4 Applicability of Environmental Regulations

Table 1.3 Applicability of various regulations

Sl. No	Name of the Act/Rule	Applicability
1	Environment (Protection) Act, 1986 – EIA Notification, 2006 and its amendments	Applicable. The proposed project is greenfield & listed under Sl. No. 5 (g) & 1(d) - Grain based distilleries producing ENA/ethanol and 13 MW Co-generation unit plant (A Category). Hence, application has to be submitted to MoEF&CC for issue of EC.
2	The Air (Prevention and Control of Pollution) Act, 1981	Applicable. As per Section 21 of the act, Consent has to be obtained from Tamil Nadu Pollution Control Board (TNPCB) for establishment and operation of the industry with respect to release of emissions confirming to standards. CTE/CTO will be obtained from TNPCB. MOEFCC notifications G.S.R. 703(E) and G.S.R. 702(E) both dated 12.11.2024 shall be followed.
3	The Water (Prevention and Control of Pollution) Act, 1974	Applicable. As per Section 25 (4) of the act, Consent has to be obtained from Tamil Nadu Pollution Control Board (TNPCB) for establishment and operation of the industry with respect to release of effluents

Sl. No	Name of the Act/Rule	Applicability
		confirming to standards. CTE/CTO will be obtained from TNPCB. MOEFCC notifications G.S.R. 703(E) and G.S.R. 702(E) both dated 12.11.2024 shall be followed.
4	The Noise Pollution (Regulation and Control) Rules, 2000 & its amendments	Applicable. As per Clause 4(1), The noise levels in any area/zone shall not exceed the ambient air quality standards in respect of noise as specified in the Schedule. The industry has to comply with noise standards specified in the Rules.
5	Hazardous and Other Wastes (Management, Handling and Transboundary Movement) Rules, 2016	Applicable. As per the Scheduled I of the Rules, the generated Used Oil from DG Sets & Oil Soaked Cotton waste will be used for light up/ start-up of for Boiler.
6	Solid Waste Management Rules, 2016	Applicable. As per clause 21, the generated Fly Ash/Bottom ash generated from the proposed activity will be used in inhouse brick manufacturing unit. Sludge from CPU/Yeast sludge/STP sludge will be used as Manure and DDGS will be sold as cattle feed/fish feed.
7	The Batteries (Management and handling) rules, 2001 and amendment 2010.	Applicable. As per the clause 5, the industry has to ensure that Waste Battery are disposed off in an environment friendly manner by giving it to an entity engaged in collection or refurbishment or recycling. The battery waste will be handed over to Tamil Nadu Pollution Control Board (TNPCB) authorized recyclers.
8	The Plastic Waste Management Rules 2016	Applicable. As per clause 8 (1) b, waste generator shall not litter the plastic waste and ensure segregated storage of waste at source and handover segregated waste to urban local body or gram Panchayat or agencies appointed by them or registered waste pickers', registered recyclers or waste collection agencies. MoU will be entered with Tamil Nadu Pollution Control Board (TNPCB) authorized recyclers for disposal of generated Plastic.
9	The Forest (Conservation) Act, 1980	Not Applicable. The project does not involve diversion of any forest land.
10	The Wildlife (Protection) Act, 1972	Not Applicable. There are no notified Protected Areas, Wildlife Sanctuaries, National Parks, Eco Sensitive Zones, Ecologically Sensitive Areas and Conservation Reserves within the 5 Km radius from the project site.

Sl. No	Name of the Act/Rule	Applicability
11	The Ancient Monuments and Archaeological Sites and Remains Act, 1958	Not Applicable. As per Clause 19(1), no construction activities such as any building within the protected area or carry on any mining, quarrying, excavating, blasting or any operation of a like nature in such area, or utilize such area or any part thereof in any other manner shall be carried out without the permission of the Central Government. In such cases, prior permission shall be sought from the Central Government. No monuments/ archaeological important sites are located within the study area.
12	Factories Act, 1948	Applicable. As per clause 6 (1) Requiring the permission in writing of the State Government or the Chief Inspector to be obtained for the site on which the factory is to be situated and for the construction or extension of any factory or class or description of factories. As per clause 7 A & B, the arrangements in the factory for ensuring safety and absence of risks to health in connection with the use, handling, storage and transport of articles and substances. Once the industry operation starts approval of the same will be taken.

Chapter
2

PROJECT DESCRIPTION

2.1 Type of project

The proposed project is a 600 KLD grain-based distillery producing ENA/Ethanol along with 13 MW Co-Generation Unit.

2.2 Need for the project

The industrial alcohol is used in most of the industries such as chemical industries in the manufacture of primarily the basic carbon based products like Acetic Acid, Butanol, Butadiene, Acetic Anhydride, Vinyl acetate, PVC etc. Pharmaceutical industries for manufacturing of insulin, antibiotics, tonics and several other essential bulk drugs and finished formulations, Extra-Neutral-Alcohol (ENA) is also useful for manufacture of cosmetics and perfume as well as in petroleum based products, etc. The industrial alcohol is the base or raw material for the most of these industries.

Therefore, M/s Greenergy Pure Ethanol Pvt. Ltd. has proposed for establishment of 600 KLD Grain Based Distillery Unit & 13 MW Co-generation Unit at Kumaramangalam Village, Kulithalai Taluk, Karur District, Tamil Nadu State.

2.3 Location

The project site is located 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 GPS coordinates of the project site is 10°54'10.17"N, 78°28'30.85"E. The site plan & contour plan are enclosed as **Annexures – 2 & 3** respectively. The SoI maps along with google view and project site photographs are as follows;

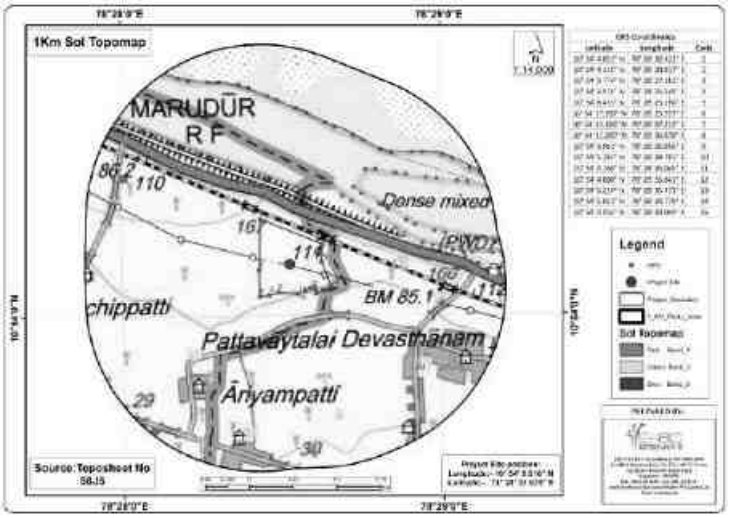


Fig 2.1 Toposheet with 1km radius of the industry

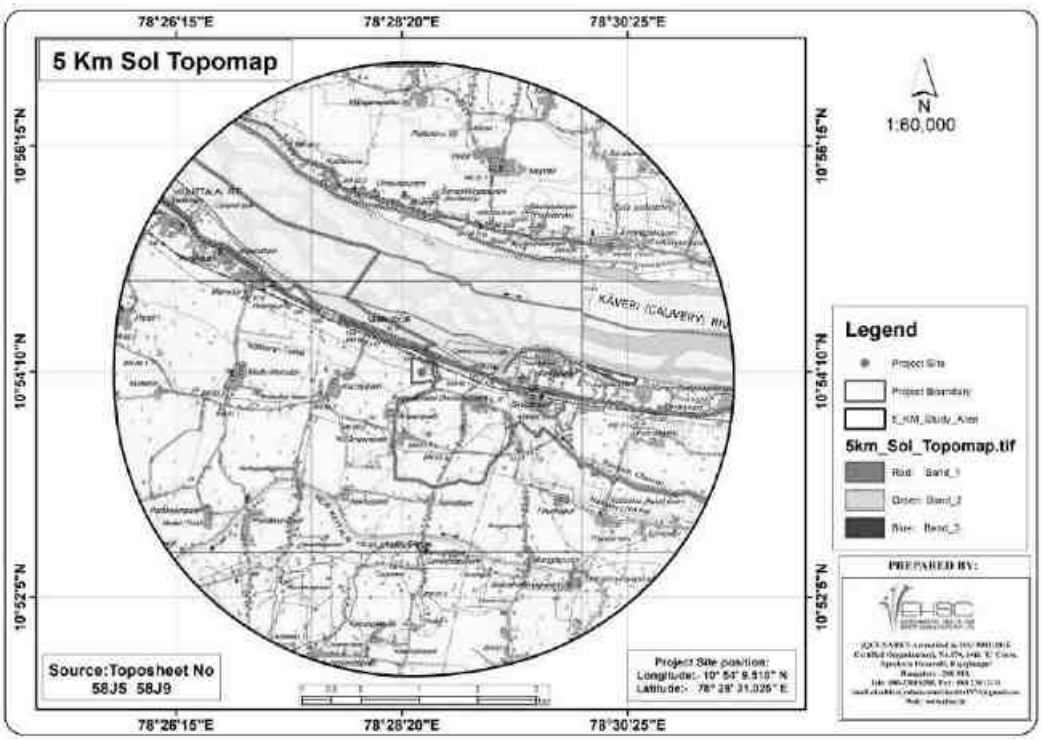


Fig 2.2 Toposheet with 5km radius of the industry

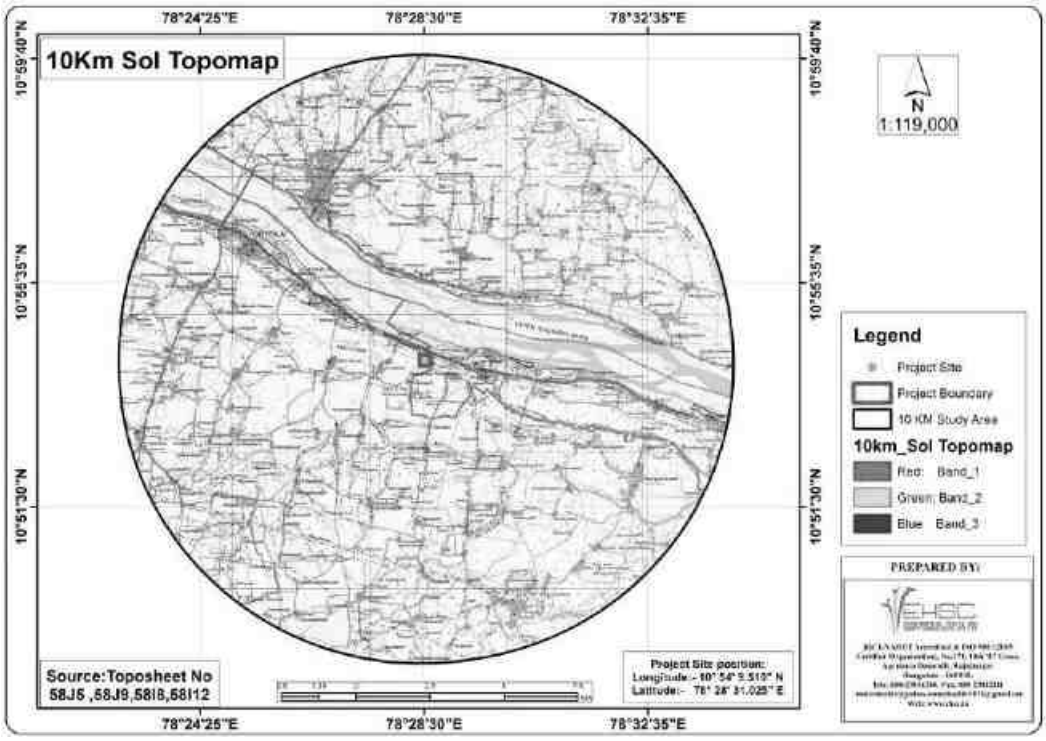


Fig 2.3 Toposheet with 10km radius of the industry

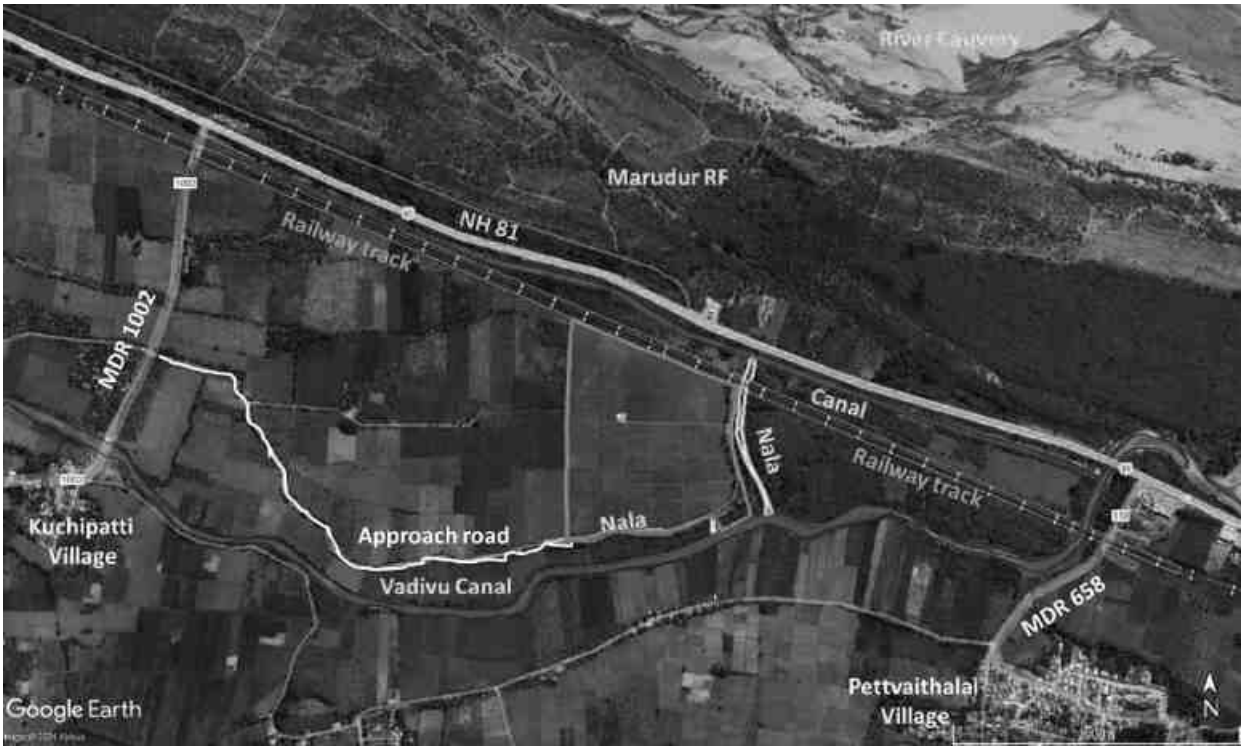


Fig 2.4 Google view of the project site

	
10°54'8.11"N, 78°28'33.39"E	10°54'12.22"N, 78°28'26.57"E
	
10°54'11.57"N, 78°28'35.89"E	10°54'8.12"N, 78°28'36.97"E
Project site showing vegetation	

<table>
<tr><td>  </td><td>  </td></tr>
<tr><td colspan="2">Foot track within project site
10°54'9.95"N, 78°28'36.64"E</td></tr>
<tr><td>  </td><td>  </td></tr>
<tr><td>Railway track towards North direction
10°54'17.01"N, 78°28'29.12"E</td><td>Nala crossing towards East direction
10°54'14.15"N, 78°28'37.64"E</td></tr>
</table>

Fig 2.5 Photographs of the Project site and its surroundings

2.3.1 Transport & Connectivity to the project site

Table 2.1 Transport & connectivity to the project site

Sl. No.	Particulars	Distance	Direction
1	MDR 1002	1.14 km	W
2	MDR 658	0.61 km	E
3	NH 81 (Kulithalai Bypass)	0.13 km	N

2.3.2 Environmental Sensitivity

Table 2.2 Environmental sensitivity in and around the project site

Sl. No.	Salient Features	Distance from project site (in Km) / Direction
1	Nearest Water Bodies/irrigation system	Nala – one within project site (S) & other adjacent to the project site (E) Vadivu Canal – 0.4 km (S) Canal – 0.3 km (N) Nangam Channel – 2.5 km (SE) New Kattalai High Level Canal – 2.7 km (S) One nala is located within project site (S) & another nala is located adjacent to (outside) the project site (E) for which a buffer of 9 m has been maintained. Further, Vadivu Canal is

Sl. No.	Salient Features	Distance from project site (in Km) / Direction
		located at a distance of 0.4 km (S) and another canal is located at a distance of 0.3 km (N). For which a request letter has been submitted for issue of NOC and the copy of the same is enclosed as **Annexure-4.**
2	Nearest River	Cauvery River - 0.60 km (N)
3	Nearest Protected Areas	None
4	Nearest densely populated place	➢ Melariyampatti Village – 0.51 km (SW) ➢ Kelariyampatti Village -0.90 km (S) ➢ Pettavaythalai– 0.55 km (SE) ➢ Kuchipatti Village – 1.04 km (W) ➢ Adinattam – 1.99 km (S) ➢ Nadupatti Village – 2.11 km (SW) ➢ Rajendram Village– 2.0 km (NE) ➢ Tiruchapur Village – 2.64 km (SE) ➢ Virampur Village – 2.68 km (NE) ➢ Ganeshapuram – 2.81 km (S) ➢ Bangalapudur Village – 3.22 km (SE) ➢ Thannerpalli Village - 4.10 km (NE) ➢ Kulithalai – 5.36 km (NW) ➢ Karur Town – 42 km (NW)
5	Nearest Airport	None
6	Nearest Railway Station	Kulithalai Railway Station – 6.49 km (NW) Pettavithalai Railway Station – 1.81 km (E) The railway line connecting Kulithalai Railway Station and Pettavithalai Railway Station is passing at an interval of 10 m from the project site boundary towards Northern side. As per the Indian Railway Works Manual, 30 m buffer has to be maintained from the railway line. Therefore, a buffer of 40 m has been retained from the edge of the railway line RoW wherein no activities are proposed. Further, Divisional Engineer, Central Southern Railway, Salem vide letter dated 15.05.2025 informed that the NOC will be issued for the activities proposed within 30 m from the Railway boundary (if any) and issue of NOC is not required for activities proposed beyond 30m from the railway boundary. Therefore, there is no requirement of NOC since a buffer of 30 m from the railway boundary has been maintained and the copy of the same is enclosed as **Annexure-5**.
7	Nearest Highway	MDR 1002 - 1.14 km (W) MDR 658 - 0.61 km (E) NH 81 (Kulithalai Bypass) - 0.13 km (N)
8	Reserve Forest	Marudur RF – 320 m (N) Kulithalai RF – 2.29 km (NW) Manatattai RF – 8.20 km (NW) A request letter has been submitted to the District Forest Officer, Karur Forest Division, Tamil Nadu Forest Department,

Sl. No.	Salient Features	Distance from project site (in Km) / Direction
		Karur District, Tamil Nadu for issue of NOC and the Divisional Forest Officer, Karur Forest Division, Karur, Government of Tamil Nadu vide letter Dt: 07.07.2025, informed that, if any project involves diversion of forest land, NOC will be issued under the Forest (Conservation) Act, 1980 and if the project is located within 10 Km radius of any protected area / within the notified ESZ of any protected area / located in wildlife corridor, NOC will be issued. In this case, no such issues arised as the project site is a private land located at a distance of 320 m from RF and no protected areas within 25 Km radius. The copy of the same is enclosed as **Annexure-6.**
9	Nearest religious place	➢ Madhyarjuneshwar Temple - 0.94 km (SE) ➢ Maruthi Temple - 0.82 km (E) ➢ Karupanna swamy Temple - 0.46 km (W) ➢ Vinayagar Temple - 1.46 km (E) ➢ Angala Parameshwari Temple - 1.49 km (E) ➢ Sri Bagavathy Amman temple - 0.61 km (SW) ➢ Shivan Kovil - 2.84 km (W) Sri Karupanna Swamy Temple, Kumaramangalam which is not recognised by Archaeological Dept., is located at a distance of 460 m towards West side of the project boundary and a request letter has been submitted to the Kumaramangalam Gram Panchayat, Kulithalai Taluk, Karur District, Tamil Nadu for issue of NOC. Copy of the acknowledgement is enclosed as **Annexure-7.**
10	Nearest archaeological sites	None
11	Major Industries	None
12	Nearest Defense Installation	None
13	Interstate Boundary	Tamil Nadu – Karnataka -143 km (NW)
14	Critical polluted area / Severely Polluted Area	**Critically Polluted Areas:** Tirrupur Industrial area -125 km (W) Mettur Industrial Area – 124 km (NW) **Severely Polluted Areas:** E-road industrial area – 94.81 km (NW) Cuddalore Industrial Area – 170 km (NE)
15	Nearest Hospital	Jayaram Hospital - 1.80 km (E) AK Hospital - 1.87 km (E) Govt. Hospital Pettavaithalai - 2.01 km (E) Annai Hospital - 3.07 km (E)
16	Nearest School	Pettvaithalai Middle School - 1.45 km (E) St Gabriels Higher Secondary School - 2.07 km (E) Ooraichi Indriya Thuvakka Palli - 1.78 km (E) Meghana Nursing Institute - 2.40 km (E)

2.3.3 Site History, Land use & ownership details

The project site of 13.50 Ha (33.35 Acres) was an agricultural land which was purchased by M/s. Greenergy Pure Ethanol Pvt. Ltd. (GPEPL) in 2024 which is presently a fallow land. The land is in the name of M/s. Greenergy Pure Ethanol Pvt. Ltd. (GPEPL). The land documents are enclosed as **Annexure – 8.** Further, a request letter in this regard has been submitted to Sub-Collectorate Office, Kulithalai on 18.09.2024 and copy is enclosed as **Annexure-9** which is under progress**.** The layout plan is enclosed as **Annexure – 2.**

2.3.5 Area statement

Table 2.3 Land use break up

Land use	Acres	Ha	Sq. m.	%
Plant area	11.75	4.75	47543.91	35.23
Greenbelt	11.55	4.67	46749.91	34.64
Road	4.34	1.76	17563.74	13.01
Parking	3.114	1.26	12604.48	9.34
Open	0.615	0.25	2486.87	1.84
Railway Buffer Area (Vacant area)	1.981	0.80	8017.19	5.94
Total	**33.35**	**13.50**	**134966.10**	**100.00**

Table 2.4 Plant area statement

Components	Area (Sqm.)
Grain unloading pit/grain handing section	785.33
Grain silo (10000MT) - 6 NOS.	1166.22
Cleaning & milling	2279.80
Liquefaction & fermentation section	3376.82
MCC room for fermentation section	2189.55
Distillation + MSDH + Evaporation	895.94
Decantation and dryer	2042.03
DDGS storage section	489.68
Ethanol storage section	6422.38
Alcohol storage section	851.12
Cooling tower for fermentation	498.50
Cooling tower for distillation section	841.01
Boiler house + auxiliaries	2255.21
Fuel yard	3681.45
Weigh bridge-2 Nos	120.32
Security cabin	22.01
Condensate polishing unit	2693.01
WTP & raw water storage tank	1262.46
Space for truck parking	1454.67
CO2 plant	706.56
Workers toilet x 2 Nos.	36.86
Admin building	274.00
Car parking	233.54
Workers parking	2167.48

Components	Area (Sqm.)
Molasses tank-2	555.22
Canteen	90.01
Store room	165.77
Driver rest room	48.99
Ash bricks plant	869.26
Space for truck parking	6180.04
Bagasse yard	2698.44
Temple	203.55
Total	**47557.21 Or 4.75 Ha**

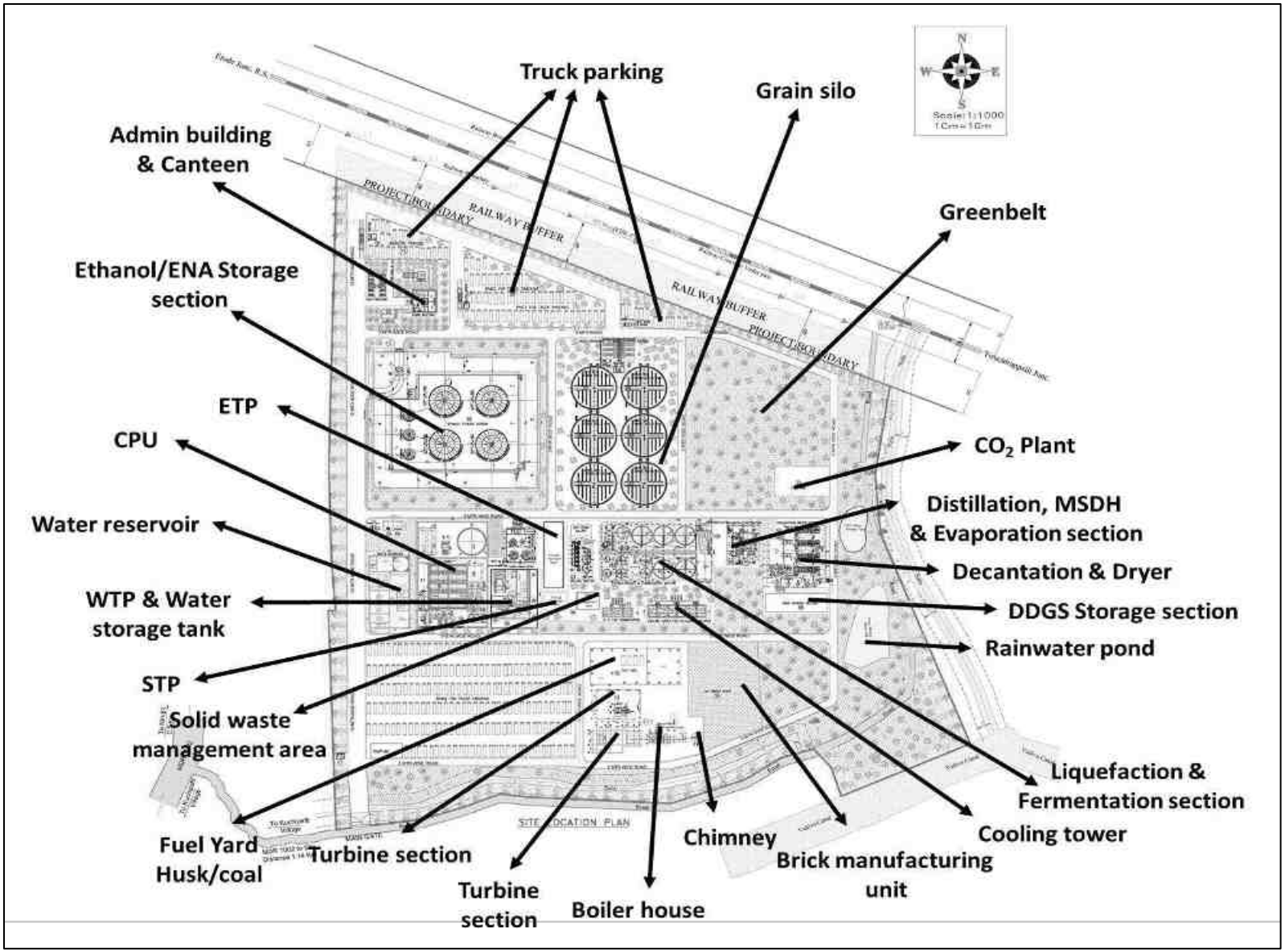


Fig 2.6 Layout plan of project site

2.4 Size or magnitude of operation

Table 2.5 Size & Magnitude

<table>
<tr><th>Sl. No.</th><th>Particulars</th><th>Quantity</th></tr>
<tr><td>1</td><td>Products & By-products</td><td>
<table>
<tr><th>Sl. No.</th><th>Product</th><th>Capacity</th><th>Remarks</th></tr>
<tr><td colspan="4">A. Products</td></tr>
<tr><td>1</td><td>ENA /Ethanol</td><td>600 KLPD</td><td>-</td></tr>
<tr><td>2</td><td>Co-generation</td><td>13 MW</td><td>The power generated will be utilized for operation and the excess power will be sold to power grids.</td></tr>
<tr><td colspan="4">B. By-Products</td></tr>
<tr><td>3</td><td>DDGS</td><td>300 TPD</td><td>Will be sold as cattle feed/fish feed</td></tr>
<tr><td>4</td><td>CO_2</td><td>150 TPD</td><td>CO_2 will be utilized in bottling (50%) and making Dry Ice (50%)</td></tr>
</table>
</td></tr>
<tr><td>2</td><td>Water Requirement</td><td>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>
</td></tr>
<tr><td>3</td><td>Power Requirement</td><td>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 sold to power grids.</td></tr>
<tr><td>4</td><td>DG Sets</td><td>For back-up DG sets of capacity 2 Nos. X 750 KVA are proposed which will be used only during power failure.</td></tr>
<tr><td>5</td><td>Condensate Polishing Unit</td><td>2000 KLD</td></tr>
<tr><td>6</td><td>Boiler</td><td>1 x 100 TPH</td></tr>
<tr><td>7</td><td>Turbine</td><td>Back pressure Turbine</td></tr>
<tr><td>8</td><td>No. of working days</td><td>Total - 330 days</td></tr>
</table>

2.4.1 Storage of Raw materials/Products/ byproducts

Table 2.6 Storage facilities

Sl. No.	Raw material / Product	Storage facilities
1	Grain	Grain silos of capacity 10,000 MT X 6 Nos.
2	Ethanol	Tanks of capacity 3300 m^3 x 4 Nos.(Ø20M X 7.50 m H).

2.4.2 Raw material required for the proposed project

Table 2.7 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			

Table 2.8 Raw material Specifications for Grain[1]

Composition	Unit	Raw material	
		Rice	Maize
Moisture	%	10-12	8-12
Starch	%	66-70	60-64
Protein	%	4-7	9-12
Fats & Oils	%	0.4-1.0	3.5-5.0
Crude Fiber	%	0.2-0.5	1.5-2.0
Ash	%	0.5-0.7	1.0-1.5
Other Organics	%	4-10	7-9
Yield of Alcohol @ 96 % v/v Per MT of Grain Flour	%v/v	442-468	402.430

2.4.3 Fuel requirement for Co-generation Unit

In the proposed project boiler of capacity - 1 X 100 TPH is proposed to install to meet the steam requirement for the Distillery process. The fuel requirement for the boiler is given below;

[1]Project report:120KLPD grain-based distillery Tandhan Biochemicals Pvt. Ltd. January2019

Table 2.9 Fuel requirement boilers

Sl. No.	Fuel	Quantity	Source	Mode of Transport	Storage
1	Husk	580 TPD	In House	By belt conveyors	Fuel Yard
2	Coal	75 TPD	Nearest industries	By road through covered trucks	Fuel Yard

High Speed Diesel (HSD) will be used in DG set. DG Set will be used only during power failure.

2.4.4 Machinery/Equipment's used in industry

The list of Machineries/Equipment to be used in the Co-gen & Distillery project are attached as **Annexure - 11**.

2.4.5 Details of boiler

Table 2.10 Boiler specification

Capacity	Pressure	Temp. ° C	Qty.	Type	Fuel Type	APCE	Chimney	Remarks
100 TPH	3.5 kg/cm^2	148	1No.	Husk /Coal fired boiler	Husk & Coal	ESP	Chimney of Ø 4.2 m & height 70 m	Efficiency of ESP is >99.8%

2.4.6 Steam requirement

Steam requirement at different sections of the plant is provided in the table below:

Table 2.11 Steam requirement

Section	Quantity
Distillation	62.5 TPH
MEE	12 TPH
Cooling, CIP (Cleaning in Place) and other ancillary operations	4 TPH
DDGS Dryer	9 TPH
Total Steam @ 3.5 kg/cm^2 (g) pressure & 148^{o}C	87.5 TPH

2.4.7 Stack height calculations

The stack height calculations for 100 TPH boiler is as follows;

A. With Coal as fuel

Coal consumption : 75 TPD
Sulphur Content in coal : 0.8% (Max, by mass)
Maximum SO_2 in the emissions (Q) : 50 kg/hr
Stack Height (H) : $14 (Q)^{0.3}$
: 45 m

B. With husk as fuel

Husk consumption	:	580 TPD
Sulphur Content in coal	:	0.18% (Max, by mass)
Maximum SO_2 in the emissions (Q)	:	87 kg/hr
Stack Height (H)	:	14 $(Q)^{0.3}$
	:	54 m

Therefore, stack of height 70 m will be provided to 100 TPH boiler for effective dispersion of Sulphur Dioxide emission into the atmosphere.

Further, stack of 30 m height (AGL) each will be provided to the DG sets of 2 Nos. x 750 KVA capacity.

2.4.8 Details of vehicular movements for transportation of raw materials & products

Table 2.12 Trucks details for transportation of raw materials & products

Sl. No.	Raw Material and Products Name	Quantity	Unit	No. of Trucks/Day	No. of Trucks/Annum (330 days)
1	Grains	950	TPD	27	8910
2	Chemicals/Nutrients	20	TPD	1	330
3	Ethanol	600	KLD	17	5610
4	DDGS	300	TPD	10	3300
5	CO_2	150	TPD	6	1980
			Total	**61**	**20130**

2.5 Proposed schedule for approval and implementation

Table 2.13 Schedule for the Project approval

Timeline achieved	**Scope of the work/activities**
October 2024- December 2024	Baseline data collection
16th February, 2026	Issue of Standard ToRs
Tentative timeline	**Scope of the work/activities**
May 2026	Environmental Public Hearing
July 2026	Submission of Final EIA/EMP report to MOEF&CC
September 2026	Issue of combined EC&CTE by MOEF&CC
June 2028	Consent for Operation from KSPCB

2.6 Technology and process description

Process description of Grain based Distillery (330 days) is as follows;

A. Grain milling and liquefaction section:

Milling is required to reduce the particle size of raw material (Grain). The milling section of the plant has the necessary equipment for cleaning of raw materials followed by Milling so as to get the desired particle size.

The raw material first taken out from the storage section and send to the milling section. The grain is taken through the bucket elevator to the top floor and fed through pre- cleaning devices like Sieves to separate oversize, de-stoner to remove stones, Magnetic Separators to remove Iron particles, if any. The grain is then fed to the Hammer Mills to mill and produce flour of desired particle size.

The lower particle size increases the total surface area per unit weight and makes the starch accessible to gelatinization during slurry preparation.

The flour is then conveyed using screw conveyors and bucket elevators and then weighed before fed to the slurry tank. The slurry of the milled raw material is prepared in water and this slurry is then further sent for liquefaction.

B. Liquefaction section

Liquefaction initiates the conversion of starch into simple molecules of dextrin. It is divided into three sub processes.

C. Pre-liquefaction

This involves partial liquefaction of starch, into sugars in presence of enzyme, at a temperature well below the gelatinization temperature. After milling, the flour is mixed with hot water in a small slurry-making tank, which has low speed agitator. The gentle mixing of flour with hot water is carried out to eliminate any lump formation. The slurry is then transferred to a main slurry tank, where chemicals required for maintaining the stability of the enzymes and for adjusting pH and also some portion of liquefaction enzyme is added. The slurry is then pumped to a high-pressure jet cooker using slurry transfer pumps.

D. Jet cooking

This step involves the cooking of starch slurry with live steam so as to instantaneously raise its temperature. This gelatinizes and opens up starch molecules, thus making it accessible to enzyme action. Jet cooking also sterilizes the slurry. The jet cooker is basically a Venturi type device where, the heating of slurry takes place instantaneously. The Jet cooker outlet cooked slurry passes through a holding coil which allows further break down of starch molecules in to smaller molecules due to turbulence inside the coil. At the end of the holding coil, the pressure is reduced and the slurry flash cooled into the flash tank. The temperature drops due to flashing of slurry and the escaped steam vapours are condensed in flash condenser and sent back for slurry making in the slurry tank. The cooled slurry is then taken to liquefaction tank for addition of liquefaction enzyme and for further break down of starch molecules.

E. Post liquefaction

The jet-cooked slurry is again held at high temperature in presence of enzyme to complete the process of liquefaction in the liquefaction tank. The pH is adjusted in this tank as the liquefaction enzyme is at its best an activity. After liquefaction, the slurry is cooled using plate heat exchangers and sent to Scarification tank.

F. Partial pre saccharification process

Scarification is the formation of sugars. Here, it is done enzymatically by breakdown of dextrin. Here a second enzyme for further breakdown and release of sugars acts upon the dextrin. The

Saccharification is carried out using amylo glycosidase enzyme to initiate the Saccharification, which is also called partial pre Saccharification PPSF method. The addition of saccharifying enzyme & holding for 1 hour will help in release of initial sugars.

G. Fermentation section

Fermentation has been developed to further improve the operating parameters of the plant in terms of high fermentation efficiency, higher alcohol percent, and trouble free and higher consistency of the performance parameters over longer period. Most modern ethanol production plants adopt this fermentation technology. It is adaptable to fed batch process. The fermentation process employs a special yeast culture and yeast management system, which can withstand variations in the grain quality, temperature and other shock loads.

Fermentation plant consists of four numbers Fermenter with all the accessories like, Plate Heat Exchangers for cooling, Air spargers, Broth mixers, and Air blowers etc. Hence it gives a tremendous advantage in maintaining the yeast population and in combating the bacterial infection. Grain flour after weighing is diluted to an appropriate sugar concentration while pumping through slurry tank, saccharification tank & next into fermenter. To help the fermentation sustain, the assimilable nitrogen are added in the medium in the form of Urea and DAP as required. Temperature in the Fermenter is maintained to an optimum level as required for efficient reaction with the help of Plate Heat Exchanger and recirculation pumping system. This recirculation also helps in proper mixing of fermented wash. Air blower is provided to supply the necessary oxygen required for the yeast. The CO_2, which is liberated, is scrubbed with water, in the CO_2 Scrubber. This CO_2 contains ethanol, which is recovered by collecting water from CO_2 Scrubber into Fermenter. The fermented wash collected in the Buffer Wash Tank is then pumped to Analyzer or Primary column for distillation. A closed loop cooling tower system with an induced draft–cooling tower with circulation pumps is also provided to ensure higher cooling efficiency and to minimize water wastages.

Fermentation is a bio-chemical reaction. This means both biological (related to living things) and chemical matters are involved in the process.

Living yeast cells participate on biological activity, while sugar ($C_{12}H_{22}O_{11}$) as chemical is involved in the fermentation process used for the manufacturing of alcohol.

In principle, glucose molecules are consumed by living yeast cells and in turn they excrete ethanol molecules and liberate carbon dioxide. This is an exothermic reaction, thus generates heat as the reaction proceeds in forward direction.

Following equation represents the fermentation reaction;

$$C_6H_{12}O_6 \xrightarrow{\text{Yeast}} 2\,C_2H_5OH + 2\,CO_2 + \text{Heat}$$

Commercially, pure glucose is not economic choice. Thus sugars (disaccharides) are used for the industrial production of alcohol.

Living yeast cell generates an enzyme, called as invertase enzyme, at the cell wall surface. These enzymes hydrolyze one sugar molecule (disaccharide) into two mono-saccharide molecules, called as glucose and fructose. This mono-saccharide is involved in conversion to alcohol.

Following equation represents the hydrolysis of sugar to glucose & fructose at cell surface;

$$C_{12}H_{22}O_{11} + H_2O \longrightarrow C_6H_{12}O_6 + C_6H_{12}O_6$$

(Disaccharides) Invertase Enzyme (Mono-saccharide)

Fermentation is a complex process. It involves multiple reactions in parallel as well as in series. Though we require ethanol as product, but many other side products are formed involving multiple reactions. This reduces the conversion efficiency of glucose to ethanol. Optimum conditions of fermentation system favor glucose conversion to ethanol, while suppressing other reaction steps.

Living yeast cells are industrially used for the conversion of sugars to alcohol. These yeast cells generate invertase enzyme, which hydrolyses sugar molecules into glucose and fructose molecules.

Saccharomysis Cerevisea strains are used in the distillery plants for the production of fuel ethanol from cereal grains.

Typical life cycle of yeast cells is divided into following four phases:

- Birth
- Growth
- Multiplication
- Death

All these four phases are considered while designing fermentation system.

Bacteria are the enemy of yeast cells. Basically, it grows at faster rate and suppresses yeast activity.

Various process parameters are considered for best productivity of the yeast cells. These conditions also ensure higher production efficiency, good quality product and with minimum initial as well as operating cost involved.

The fermented wash collected in the Buffer Wash Tank & then pumped to Analyzer column for distillation. A closed loop & induced draft cooling tower with circulation pumps is also provided to ensure higher cooling efficiency and to minimize water wastages.

H. Multi pressure vacuum distillation

The vacuum distillation has many advantages over conventional atmospheric distillation plants like lower energy requirement, better quality products and less scaling on the distillation trays due to sludge. The vacuum distillation produces ethanol of international quality standards and there is a lot of demand of ethanol from the vacuum distillation process. Alcohol quality, which is produced from this latest technology, meets to most of the international quality standards like US, British and Japanese standards.

The vacuum distillation approximately requires 50 % less steam as compared to conventional old distillation technologies. The vacuum distillation consists of distillation columns with high efficiency column trays, condensers, Reboilers, vacuum pumps and reflux pumps.

In this vacuum distillation, alcohol is separated and concentrated using principal of fractional distillation. This is based on difference in boiling points of involved compounds in mixture. There

are eight distillation columns in the system. These are Primary column, Degasser column, Pre-Rectifier column, Hydro - extractive distillation column, Rectifier column, Refining column, De-Recovery Column and De-Aldehyde Column

i. Primary cum degasser column

Primary column (Analyzer Column) is operated under vacuum and it is heated using the top vapours of the Rectifier column. The vacuum operation of the Primary column decreases the overall energy requirement of column. Due to vacuum, scaling is also reduced in this column & plant can be operated for long time smoothly.

The fermented wash is preheated using a beer heater and followed by a plate heat exchanger, then it is fed at the top of Degasser column. The pre heating of mash in two stages recovers energy and saves steam required for the distillation.

Degasser column separates the impurities on the basis of boiling point. These impurities are sent to De-aldehyde column.

Alcohol and other volatile compounds are separated from the top of the Primary Column & fed to Pre- Rectifier Column.

The semi-solid waste in fermented wash is reached at the bottom of Primary column. This semi-solid waste is called as thin slop & sent to further recovery of valuable DDGS & process condensate water.

ii. Primary rectifier column

Primary Rectifier Column is driven on steam indirectly with the help of one reboiler. This column gets feed from Analyzer column & Dealdehyde Column. This column is operated under vacuum condition to reduce the steam consumption & better quality. Heavy & Light Fusel Oils are separated from this column & fed to De - fusel Oil Column.

Impure spirit is also separated from the condenser of this column. Column top vapors are condensed in one beer heater & remaining in condensers.

Alcohol is concentrated in this column & spent water (spent lees) is separated from the bottom of the column.

iii. Recovery column

All fusel oil & esters impurities are fed to this column. Heavy Fusel Oil & Light Fusel Oil is drawn out from the column & concentrated in decanters. Water is also used for washing of fusel oil & to recover the alcohol. When fusel oil gets concentrated in decanter, fusel oil transferred to fusel oil storage.

I. Dehydration technology

Molecular sieve technology works on the principle of pressure swing adsorption. Here water is removed by adsorbing on surface of `Molecular Sieves' and then cyclically removing it under different conditions (steaming).

Molecular sieves are nothing but synthetic Zeolite typically 3A Zeolite. Zeolites are synthetic crystalline Aluminosilicates. This material has strong affinity for water. They adsorb the water when heated (and pressurized) and desorbs the water under vacuum. This principle is used to

dehydrate ethanol. The crystalline structure of Zeolite is complex and gives this material the ability to adsorb or reject material based on molecular sizes. Water molecule can enter the sieve and be adsorbed, but larger alcohol molecule will not be retained and will go through the bed. There can be two beds in parallel. Once a particular bed is saturated with water, the anhydrous alcohol is re-circulated to remove water from the bed under vacuum. The operation is called regeneration of bed; so that adsorbed water is desorbed from the bed. Till that time, other bed is used for dehydration.

J. Evaporation

EVAPORATION consists of falling film evaporators. It gets heat from steam. There are five falling film evaporator. Vapours of last evaporator get condensed in a surface condenser. CIP connection for all evaporator is provided for cleaning purpose.

In EVAPORATION first evaporator get heat from the steam provided. Thin slop vaporized in first stage give energy to second stage. There are total five falling film evaporator. Evaporators are in forward feed arrangement. Vapours of Second evaporator are fed to third effect Evaporator. Vapours of Third evaporator are fed to fourth effect Evaporator. Then, Vapours of fourth evaporator are fed to fifth effect Evaporator. Falling film evaporators can be operated at very low temperature differences between the heating media and the boiling liquid, and they also have very short product contact times, typically just a few seconds per pass. These characteristics make the falling film evaporator particularly suitable for thin slop evaporation.

In EVAPORATION there is specifically designed thin slop distributors for the proper distribution of thin slop in tubes. Specific design of the liquid distribution system achieve full and even product wetting of the tubes. Because of the low liquid holding volume in this type of unit, the falling film Evaporator can be started up quickly and changed to cleaning mode easily.

In EVAPORATION falling film evaporators are highly responsive to alterations of parameters such as energy supply, vacuum, feed rate, concentrations, etc. it will be equipped with a well-designed automatic control system therefore it can produce a very consistent concentrated product.

In Evaporation is an operation used to remove a liquid from a solution, suspension, or emulsion by boiling off some of the liquid. It is thus a thermal separation, or thermal concentration, process. We define the evaporation process as one that starts with a liquid product and ends up with a more concentrated liquid as the main product from the process.

K. CO_2 Recovery

CO_2 Recovery Plant takes CO_2 gas from the fermentation process passes through a series of purification processes namely - a stainless steel CO_2 foam trap to separate the gas, a deodorizer. At the same time, CO_2 with a very high degree of purity is indispensable for the production process in a modern brewery. In several steps the carbon dioxide gas is purified thoroughly, so that it complies even with the strict demands of the brewing industry. From the fermentation tanks the CO_2 is first led to the foam separator. In this stage, the foam entrained from the fermentation tanks is separated. Through low-pressure gas storage balloon the gas flows into the gas scrubber, where it is cleaned by counter flow of water. In the gas scrubber water-soluble impurities and aerosols are absorbed from the carbon dioxide. CO_2 of 150 TPD will be bottled (75 TPD) and will be used in making Dry ice (75 TPD).

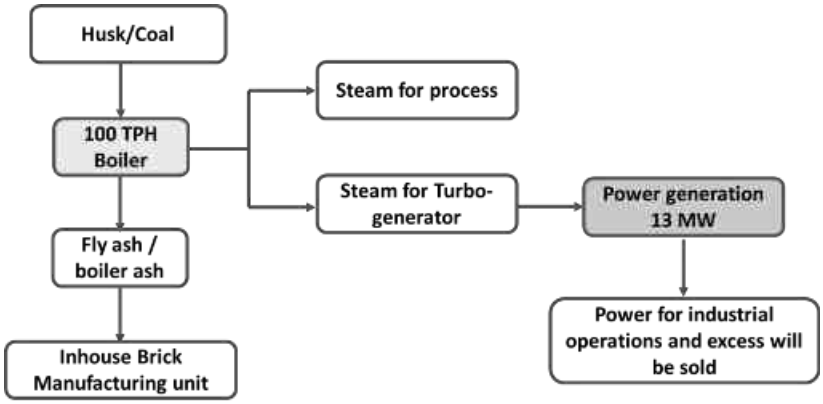


Fig 2.7 Process flowchart- Cogeneration unit

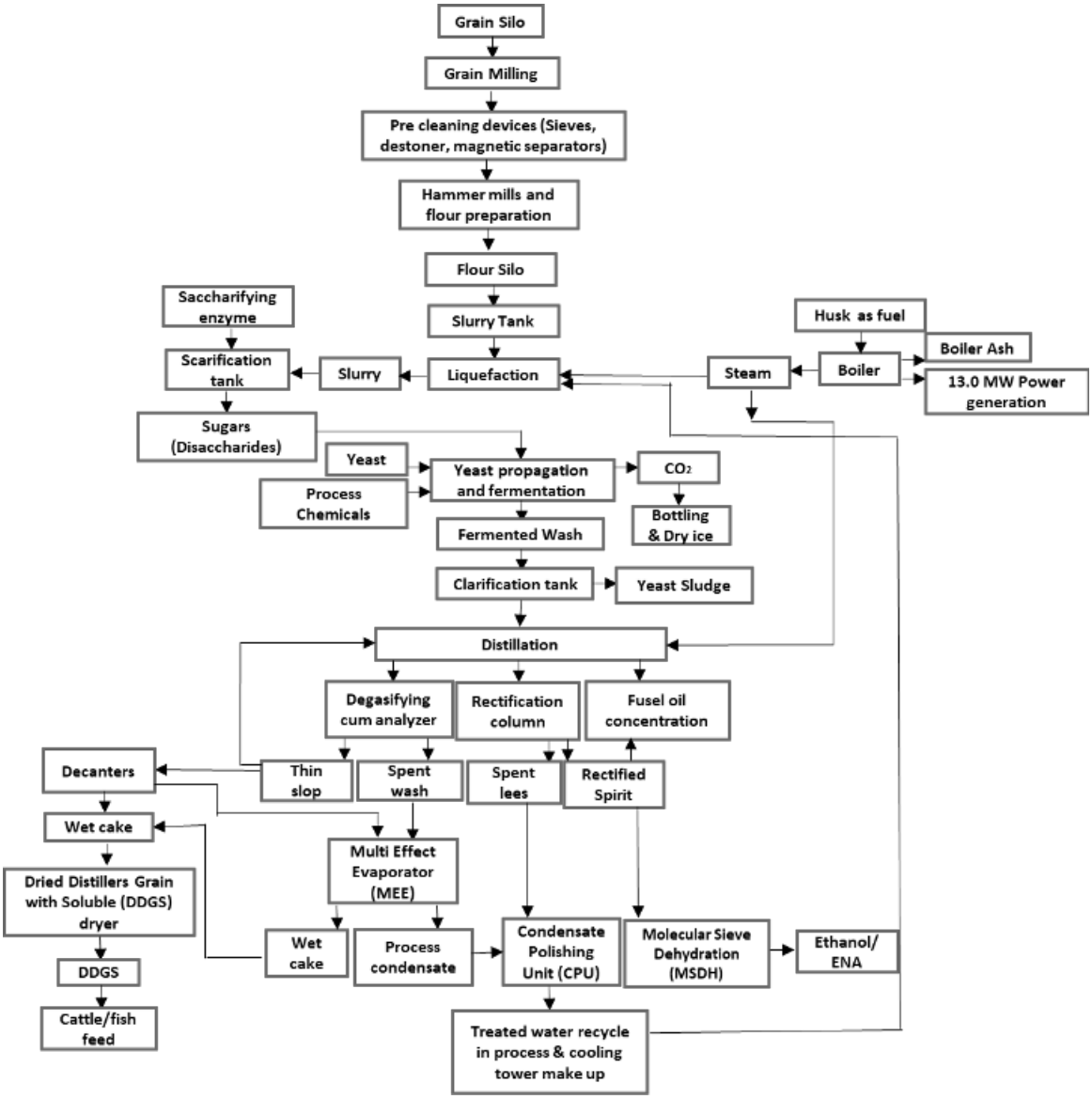


Fig 2.8 Process flowchart- Grain based distillery

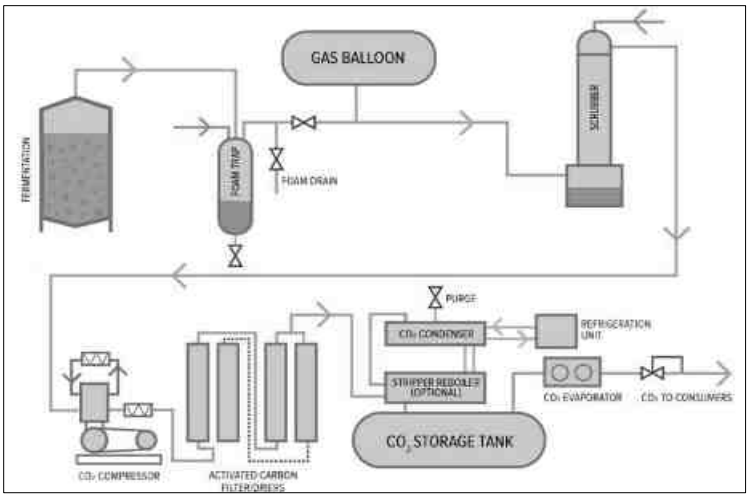


Fig 2.9 Process flowchart- CO_2 recovery plant

2.7 Resource requirement

2.7.1 Water requirement

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 **(Annexure-12)**.

Total water requirement: **3700 KLD**	
Fresh water	**Recycled water**
2500 KLD	1200 KLD

Further, rainwater (47,000 KLD) stored in Rainwater ponds will be utilized for process for 20 days and fresh water from Cauvery River will be utilized for 311 days. The water balance chart is given below.

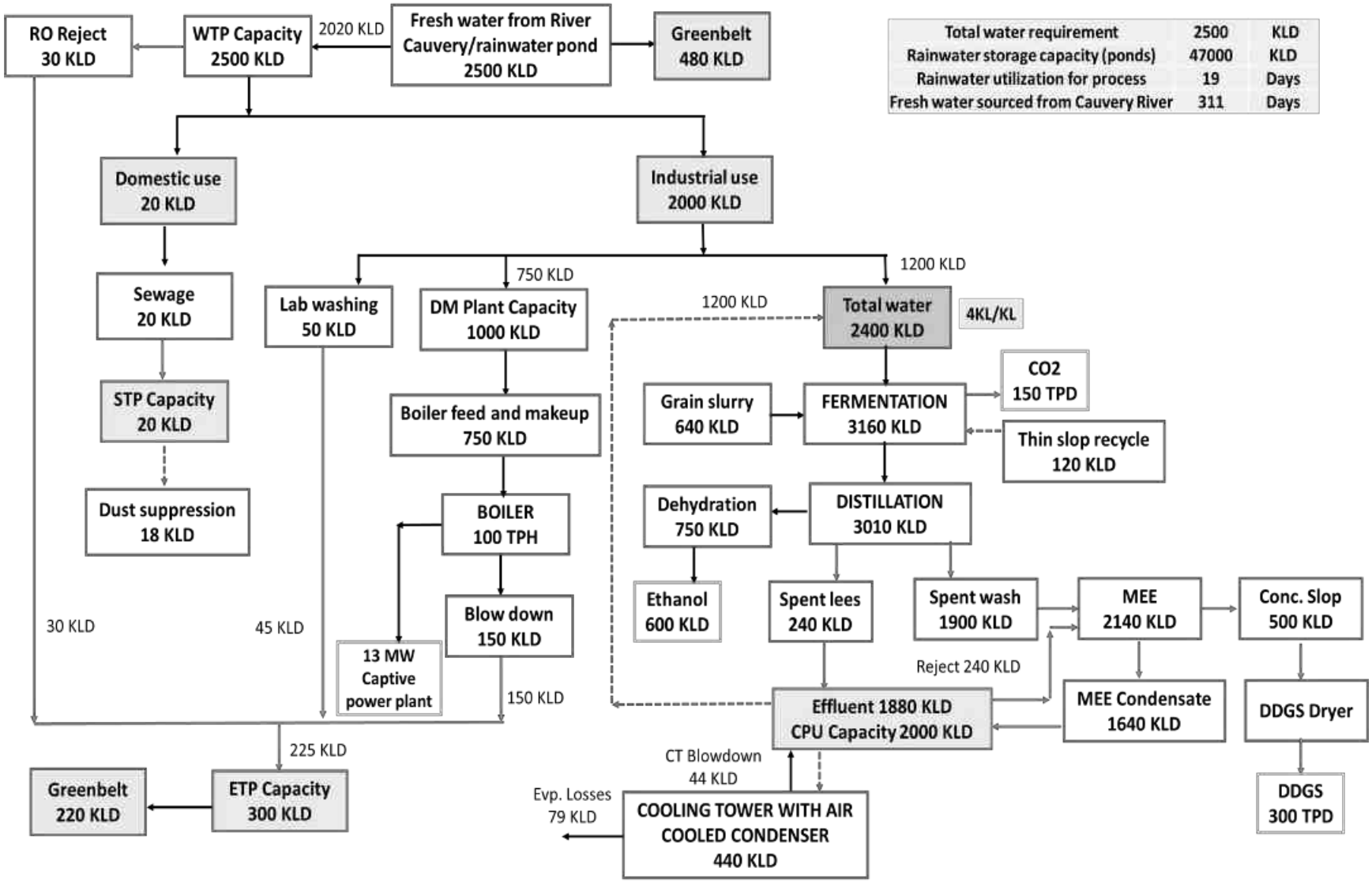


Fig 2.10 Water Balance Chart

2.7.2 Power requirement

The proposed grain-based Distillery will have Boiler of capacity 100 TPH with 13 MW of power generation with rice husk & Imported coal as a fuel.

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 sold 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.

2.9 Product specifications – Distillery output

Table 2.14 Specifications of Ethanol

Sl. No.	Parameter	Unit	Specifications
1	Ethanol content including congeners / impurities at 15.6 deg C	% v/v	Min. 99.8
2	Miscibility with water	-	Miscibile
3	Alkalinity	-	NIL
4	Acidity (CH_3COOH)	Mg/l	Mx. 30
5	Residue on Evaporation	Wt%	Max. 0.005
6	Aldehydes as (CH_3CHO)	Mg/l	Max. 60
7	Copper	Mg/Kg	Max. 0.1
8	Methyl Alcohol	Mg/l	Max. 300
9	Appearance	-	colorless

Table 2.15 Specifications of Extra Neutral Alcohol (ENA)

Sl. No.	Characteristics	Unit	Specifications
1	Ethanol content at 20 ^oC, min	% v/v	96
2	Relative density at 15 ^oC	-	0.80692
3	Miscibility with water	-	Miscible
4	Acidity, as Acetic acid, max	ppm	15
5	Residue on evaporation, max	ppm	0.02
6	Aldehydes, as Acetaldehyde,	ppm	5 -10
7	Esters, as Ethyl acetate, max	ppm	13
8	Copper, as Cu, max	ppm	0.02
9	Lead, as Pb, max	ppm	1
10	Methanol	ppm	5-10
11	Higher Alcohol as Iso-amyl alcohol , max	ppm	30
12	Furfural	ppm	No Detectable
13	Permanganate De-colorization Time	min	45 - 50
14	Appearance	-	colorless

Table 2.16 Specifications of fusel oil

Sl. No.	Characteristic	% v/v
1	Appearance	Yellow - Dark brown
2	Fusel oil	Acrid smell
3	Specific gravity	0.83-0.85
4	Ethyl alcohol	8.98
5	Water	12.23
6	Iso-amyl alcohol	61.52
7	Iso-butyl alcohol	15.87
8	n-butyl alcohol	0.707
9	n-propyl alcohol	0.702

Table 2.17 Specifications of CO_2

By-product	Characteristic
CO_2	Colorless and odorless gas.
	Non-flammable gas.
	Slightly toxic.
	Denser than air.
	Melting point of -55.6°C and has a boiling point of - 78.5°C.
	Density of 1.977g/ml.
	It is soluble in water, solubility decreases as temperature increases.

Table 2.18 Specifications of Spent lees

Sl. No.	Characteristic	% v/v
1	pH	4.5 – 6.5
2	Color	Brownish to light yellow
3	Total solids mg/ltr	10,000 – 20,000 mg/L
4	Total suspended solids mg/Ltr	2,000 – 5,000 mg/L
5	Total dissolved solids mg/ltr	8,000 – 15,000 mg/L
6	Chemical oxygen demand mg/ltr	20,000 – 40,000 mg/L
7	Max alcohol percentage %	0 - 1

Table 2.19 Specifications of Spent wash

Sl. No.	Characteristic	% v/v
1	Color	Brownish to light yellow
2	Odor	Strong, pungent, fermented odor
3	pH	4.5 – 6.5 (slightly acidic to near neutral)
4	Total dissolved solids mg/L	8,000 – 15,000 mg/L
5	Total suspended solids mg/L	2,000 – 5,000 mg/L
6	Biological Oxygen Demand mg/L	15,000 – 30,000 mg/L
7	Chemical oxygen demand mg/ltr	40,000 – 60,000 mg/L
8	Brix	2 – 4°
9	Nitrogen mg/L	200 – 500 mg/L
10	Organic Carbon %	2 – 4%
11	Phosphorous mg/L	50 – 150 mg/L
12	Potassium mg/L	500 – 1,200 mg/L

Sl. No.	Characteristic	% v/v
13	Calcium mg/L	200 – 600 mg/L
14	Magnesium mg/Ltr	100 – 300 mg/L
15	Chloride mg/L	300 – 800 mg/L

Table 2.20 Specifications of DDGS

By-product	Characteristic
DDGS	Relatively high Crude Protein content
	27–35% protein
	Low energy content
	Used in livestock, poultry, and fish feeds

2.9 Description of mitigation measures

2.9.1 Air pollution/Emission control measures

The air pollution sources from the proposed project are operation of Boiler (100 TPH), operation of DG sets (2 X 750 KVA), operation of co-gen plant (Turbine), Vehicular movement for loading and unloading of raw materials & finished products, handling of bagasse & coal in the industry, Fugitive emission from fly ash storage area, manufacturing process and other industrial activities, etc.

To reduce the impacts on the surrounding environment, all efforts will be made to adopt the latest technologies and provision of adequate pollution control measures for different processes and de-dusting stacks for different fugitive emission sources will be installed to meet the legal / environmental standards prescribed by the MoEF&CC/CPCB. The details are as follows;

- Erecting tall barricades / higher walls to act as wind shield & to avoid spread of fine materials from the industry.
- The conveyer transfer points will be provided with dust-controls.
- Cleaning of the return belts in the conveyor belt systems to remove loose dust.
- Vehicles shall be given speed limit of 15 km/hr within the premise.
- Implementation of correct loading and unloading practices.
- Materials shall be transported in securely covered trucks to reduce dust emission.
- The workers shall be given dust masks to avoid inhalation of dust & fugitive emissions.
- 1 Nos of Electro Static Precipitator (ESP) with efficiency of 99.8% will be provided to Boilers (100 TPH) to capture the fly ash and connected to stack height of 70 m.
- Acoustic enclosures will be provided to 2 x 750 KVA DG set with a stack height of 30 m ARL and will be used only during power failure. Regular stack monitoring will be carried out to ensure that the emissions are well within the norms.
- The CO_2 released in the fermentation process of ethanol manufacturing contains maximum impurities as compared to other sources. These impurities include Sulphur, Various Hydrocarbons including aromatic hydrocarbons. By installing CO_2 recovery plant is capable to reduce these impurities spillage to air. The list of APCEs with stack height proposed to install are given in the below table;

Table 2.21 Air Pollution Control Equipment's

Sl. No.	APCEs Installed in the areas	Stack height in m (AGL)	APCE provided	Emission standards for PM
1	Boiler (100 TPH)	60	ESP with ID fan	<50 mg/Nm^3
			ESP with ID fan	
2	2 x 750 KVA	30 m	Acoustic enclosures will be provided with a stack height of 30 m.	-

2.9.1.1 Fugitive dust control

- Fugitive emissions shall be controlled by providing closed storage facility, closed handling and conveyance of chemicals/materials.
- M/s. GPEPL has proposed regular & periodic water sprinkling on all exposed surfaces, internal roads, near bagasse & coal yards will be done to suppress dust emissions.
- Fugitive emissions/ air pollutants are controlled from the raw materials handling and stockpiling in open stockyards by carrying water sprinkling at regular intervals (2 to 3 times per day).
- Raw Material will be transported by covered trucks with tarpaulin sheets.
- Maintaining good housekeeping and Regular road sweeping with vacuum machine/ manually.
- A thick green belt will be developed within the plant to reduce fugitive emissions.

2.9.2 Odour control

- The odour problem in industry is mainly from spent wash; the generated spent wash from the proposed 600 KLD Grain based distillery project shall be carried through closed pipe line passed through anaerobic digester and concentrated in MEE (Multiple Effect Evaporator) which will be dried to form Distillers Dried Grains with Solubles (DDGS) and will be sold as cattle feed/fish feed. Hence, odour nuisance due to spent wash storage activity will be entirely eliminated.
- Collection of waste yeast sludge from fermentation section in a closed system and its immediate proper disposal.
- Reduced volume of effluents (Spent wash, spent lees) by adopting strategic approaches such as use of the effluents back in process under Reduce-Reuse-Recycle plan.
- Suitable plantation in and around the treatment units, which can minimize undesirable smells around the treatment units.

2.9.3 Noise level pollution control

During the operation phase primarily, noise will be generated from equipment's such as Boiler, Stream turbine & DG sets.

Exposure to high noise causes varying degree of damage to human hearing system which is initially reversible. Sleep deprivation, annoyance, stress, poor concentration, mental fatigue and headache are few of the other effects which are caused due to prolonged exposure to high level noise. To reduce noise levels below given mitigation measures will be adopted;

- Provision of insulating caps at the exit of noise source on the machinery.

- Noise level can be reduced by stopping leakages from various steam lines, compressed air lines and other high-pressure equipment.
- Ear plugs will be provided to the workers exposed to high noise prone activity and it will be enforced to be used by the workers;
- Monthly Ambient noise level monitoring will be conducted during construction phase and operation phase to conform to the stipulated standards both during day and night time as per TNPCB.
- D.G. Sets with acoustic enclosures will be provided.
- Noise generating equipment will be provided with proper sound proof enclosures.
- All rotating items will be well lubricated and provided with enclosures as far as possible to reduce noise transmission.

2.9.4 Wastewater generation & its management

Construction phase: 5 KLD of domestic sewage is generated from workers colony which will be treated in a mobile STP of capacity 10 KLD and the treated water will be used for water sprinkling activities at project site.

Operation phase:
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.

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.

2.9.5 Solid & Hazardous waste generation & its disposal

Details provided in Section 4.7.

2.9 Risk of technological failure

The failure of pollution control systems may be anticipated due to technological failures. During such incidents, the plant will be completely shut down for rectification in the presence of experts and TNPCB will be informed about the incidence.

Chapter
3

DESCRIPTION OF THE ENVIRONMENT

3.1 Study area

The proposed project located at 10°54'10.17"N, 78°28'30.85"E. The study area of the project is 10Km radius from the proposed project site falling within the Toposheet Nos. 58J/5 & 58J/9 Survey on India (SoI).

3.2 Study period

The Environmental baseline study was carried out during the Post-monsoon season (October 2024 to December, 2024). Service of M/s Environmental Health and Safety Research and Development Centre LLP (EHSRDC LLP), Bengaluru, an Environmental Laboratory recognized by MoEF&CC and accredited by NABL was used for baseline data collection for the project.

3.3 Land use

3.3.1 Methodology

Using ERDAS Version 2014 and Arc GIS Software Version 10.6, Survey of India (SOI) Topo sheets and High-resolution satellite imageries from National Remote Sensing Centre (NRSC), Hyderabad were processed to produce required maps. For land use and land cover analysis, Level-I classification was referred. Ground truthing was carried by obtaining Geographical Coordinates of prominent locations out to verify the correctness of the maps.

3.3.2 Secondary Data

SOI toposheets were downloaded from Survey of India website and Google images were captured from Google Earth Pro software. Further, High Resolution Satellite Data were procured from the NRSC, Hyderabad and the details are as follows;

Table 3.1 Details of Satellite imagery

Sl. No.	Date of Capture	Resolution	Source
1	03.03.2024	5.8 m	IRS-R2A-LISS-IV

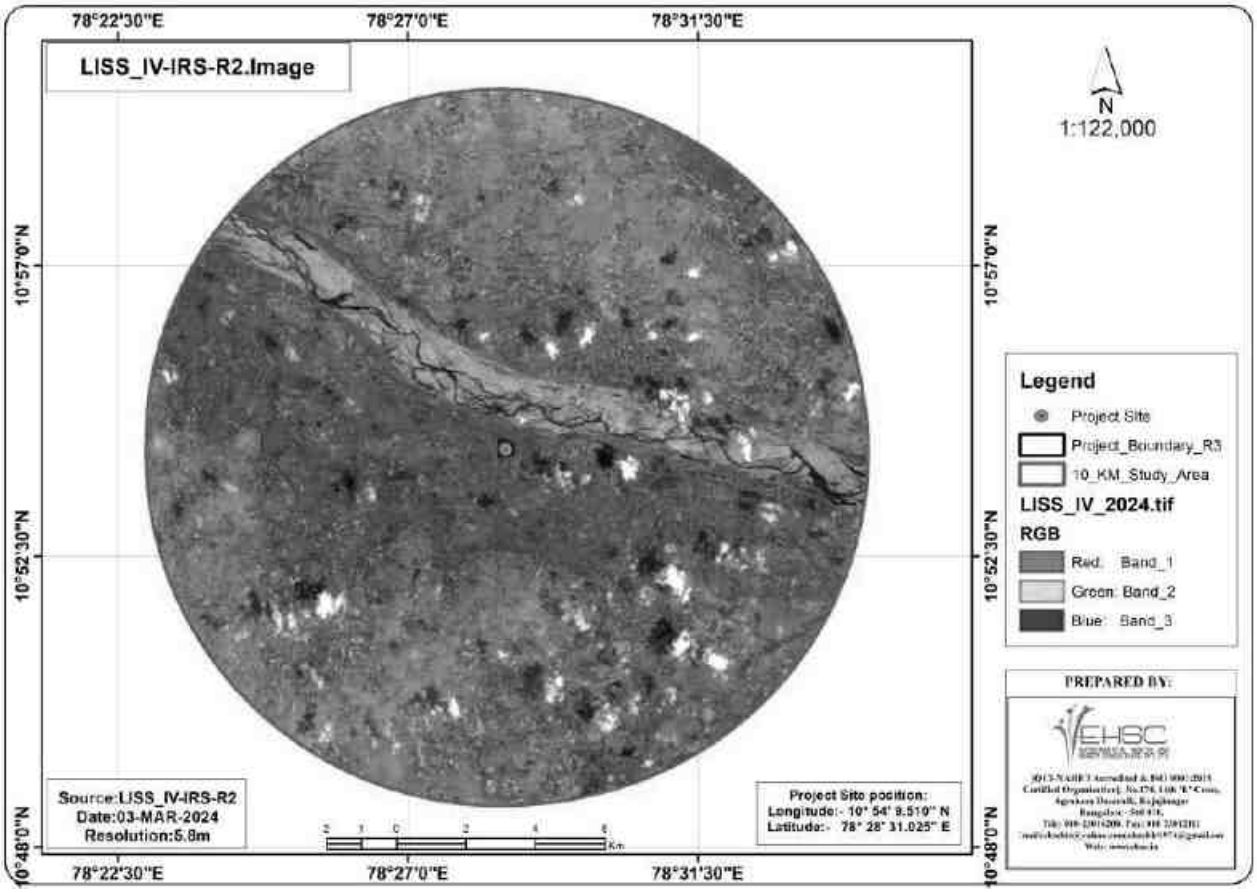


Fig 3.1 Satellite imagery map of the study area

3.3.3 Primary Data

During the study period the primary data has been collected at project site and study area and also by visual inspections and communications with local people in the study area about the background information of the land use /land cover. Ground truth verification was carried out to verify the correctness of maps. GPS co-ordinates of prominent locations were recorded.

The ground truth survey (Stratified Random Sampling Method) revealed that all along the study area were agricultural lands with crops such as sugarcane, Mango, Coconuts, Areca nuts, Banana and oilseeds. Further, several canals were recorded in the study area showing that the agricultural lands are benefitted by the irrigation systems. River Cauvery is located in the North side of the project site. Railway track, NH 81, MDR 1002 & MDR 658 are the means of transportation available in the study area. Forest areas are majorly concentrated in Northern part of the study area Marudur RF, Kulithalai RF and Manatattai RF.

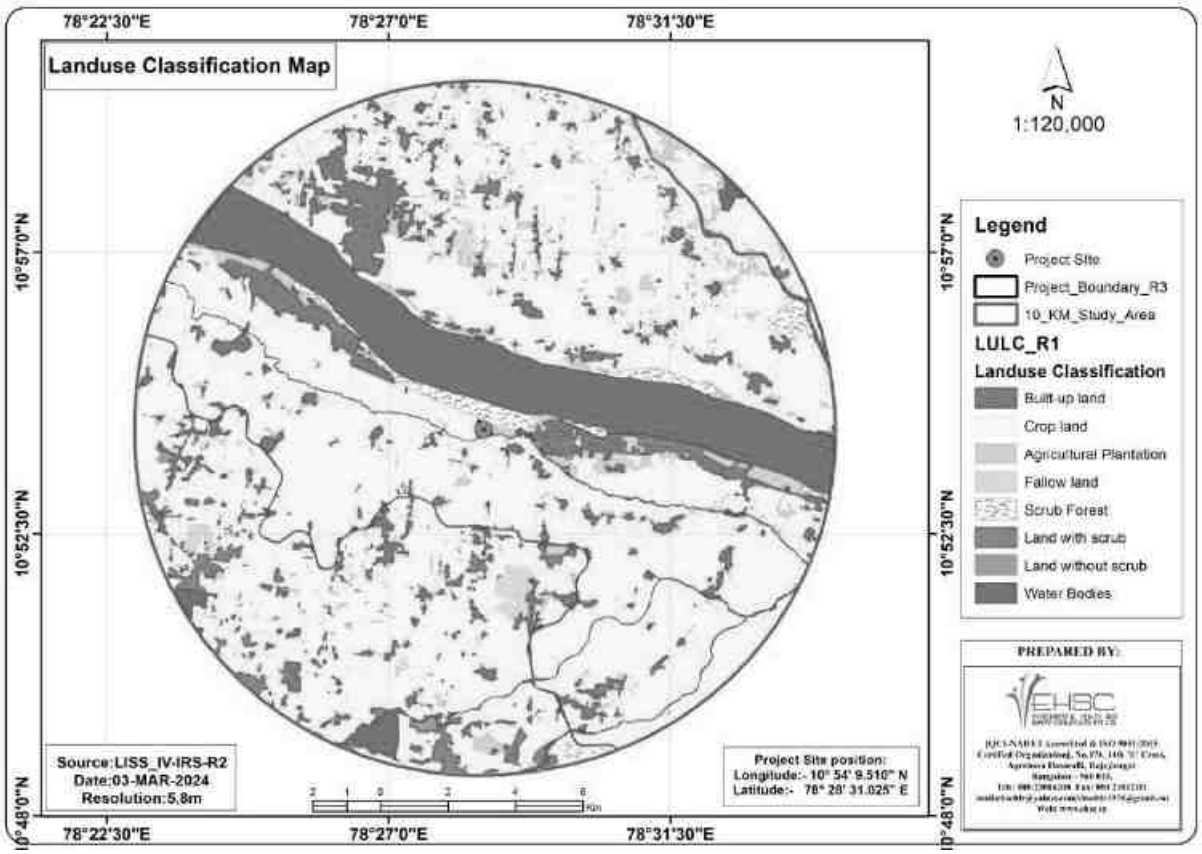


Fig 3.2 LULC map of the study area (10 km)

Table 3.2 Details of the land use of the study area

Sl No	Land use Classification	Area in Sq. M.	Area in Sq. Km.	Area in %
1	Agricultural Plantation	1,76,07,287.39	17.61	5.34
2	Built-up land	3,54,77,905.40	35.48	10.76
3	Crop land	22.52.87.653.61	225.29	68.33
4	Fallow land	22.69.273.21	2.27	0.69
5	Land with scrub	57.13.890.86	5.71	1.73
6	Land without scrub	2.39.616.96	0.24	0.07
7	Scrub Forest	49.06.087.24	4.91	1.49
8	Water Bodies	3.82.13.539.75	38.21	11.59
Grand Total		**32.97.15.254.44**	**329.72**	**100.00**



Fig 3.3 Photographs showing ground truth verification

3.3.4 Interpretation

Project site is located in the catchment area of Cauvery River. The results indicate that the study area buffer zone is dominated by Agriculture Land (74.36%) it includes Cropland (68.33%), Agriculture plantation land (5.34%) and fallow land (0.69%). Followed by water bodies (11.59%), built-up land (10.76%), Land with scrub (1.73%), Scrub Forest (1.49%) and Land without scrub (0.07%). Overall, it is observed that the agricultural lands in the study area are benefitted by the irrigation systems. Forest areas are majorly concentrated in Northern part of the study area. The study area consists of small villages such as Kuchipatti, Melariyampatti, Kelariyampatti, Marudur, Nadupatti, Valayapatti, etc and densely populated areas such as Karur, Kulithalai and Pettavaithalai. Further, no industries are located in the study area.

3.4 Soil environment

3.4.1 Methodology

To know about the existing soil conditions in and around the project site, total 7 No (4 samples within the project site/core area and 3 in the buffer area) of soil sampling locations were selected for studying soil characteristics in the study area. The locations have been spread over in the study area, keeping in view the Land use and land cover and soil types which would occur and represent an overall idea of the soil characteristics within the study area.

The soil sampling was carried out on 03.10.2024 in the study area and within the site. Composite soil samples were collected by using Auger at 15-30 Cm depth. Representative samples were collected and mixed homogeneously. Further, the soil sample was divided into 4 quarters. Of which, 2 quarters will be selected for analysis. The method adopted for analysis of soil samples is given below;

Table 3.3 Analytical methods Used for Physico-chemical Analysis of soil

Sl. No.	Parameter	Method
1	Texture	Bouyoucos Hydrometer Method
2	Colour	Musell color Chart method
3	Bulk Density	Bulk Density of a Disturbed Soil Sample
4	Moisture Content	Oven Drying Method or Gravimetric Method
5	pH	Electrode method
6	Electrical Conductivity	Electrode method
7	Sand	Bouyoucos Hydrometer Method & Soil texture triangle
8	Silt	Bouyoucos Hydrometer Method & Soil texture triangle
9	Clay	Bouyoucos Hydrometer Method & Soil texture triangle
10	Soil Salinity	Electrode method
11	Organic Carbon	Walkley & Blacks Method
12	Organic Matter	Walkley & Blacks Method
13	Available Nitrogen as N	Micro Kjeldahl
14	Available Phosphorus	Olsen’s Method or Spectrophotometer
15	Available Potassium as K	Flame photometric Method
16	Calcium as Ca	EDTA method

Sl. No.	Parameter	Method
17	Magnesium as Mg	EDTA method
18	Sodium	Flame photometric Method
19	Sodium Absorption Ratio	By calculation
20	Sulphate	Tuebidimetric or Spectrophotometer Method
21	Boron	Azomethine H reagent Method
22	Zinc as Zn	Hot Plate Acid digestion Method
23	Manganese as Mn	Hot Plate Acid digestion Method
24	Copper as Cu	Hot Plate Acid digestion Method
25	Cation Exchange Capacity	Flame Photometer Method
26	Hexavalent Chromium	Alkaline Digestion Method
27	Total Chromium	Acid digestion Method
28	Porosity	Calculation Method
29	Percent Sodium	Calculation Method
30	Lead	Acid digestion Method
31	Nickel	Acid digestion Method
32	Iron	Acid digestion Method
33	Water Holding Capacity	Gravimetric Method

3.4.2 Secondary Data

Not available.

3.4.3 Primary Data

Table 3.4 Details of soil sampling locations

Sampling Code	Station name	GPS Coordinates	Distance & Direction	Criteria for selection
S1	Project site – North	10^0 54’15.23” N,78^0 28’ 33.63” E	-	Project area
S2	Project Site – South	10^0 54’5.17” N,78^0 28’ 34.42” E	-	
S3	Project Site – East	10^0 54’7.32” N,78^0 28’ 36.59” E	-	
S4	Project site – West	10^0 54’8.55” N ,78^0 28’ 29.1” E	-	
S5	Kumaramangala (Near Sri Karupannaswamy Temple)	10^0 54’10.81” N, 78^0 28’ 10.27” E	0.45 Km, W	Agricultural land
S6	Pattavaythalai	10^0 53’41.91” N, 78^0 28’ 54.00” E	0.87 Km, SE	
S7	Keelariyampatti	10^0 53’35.7” N, 78^0 28’ 15.36” E	0.91 Km, SW	

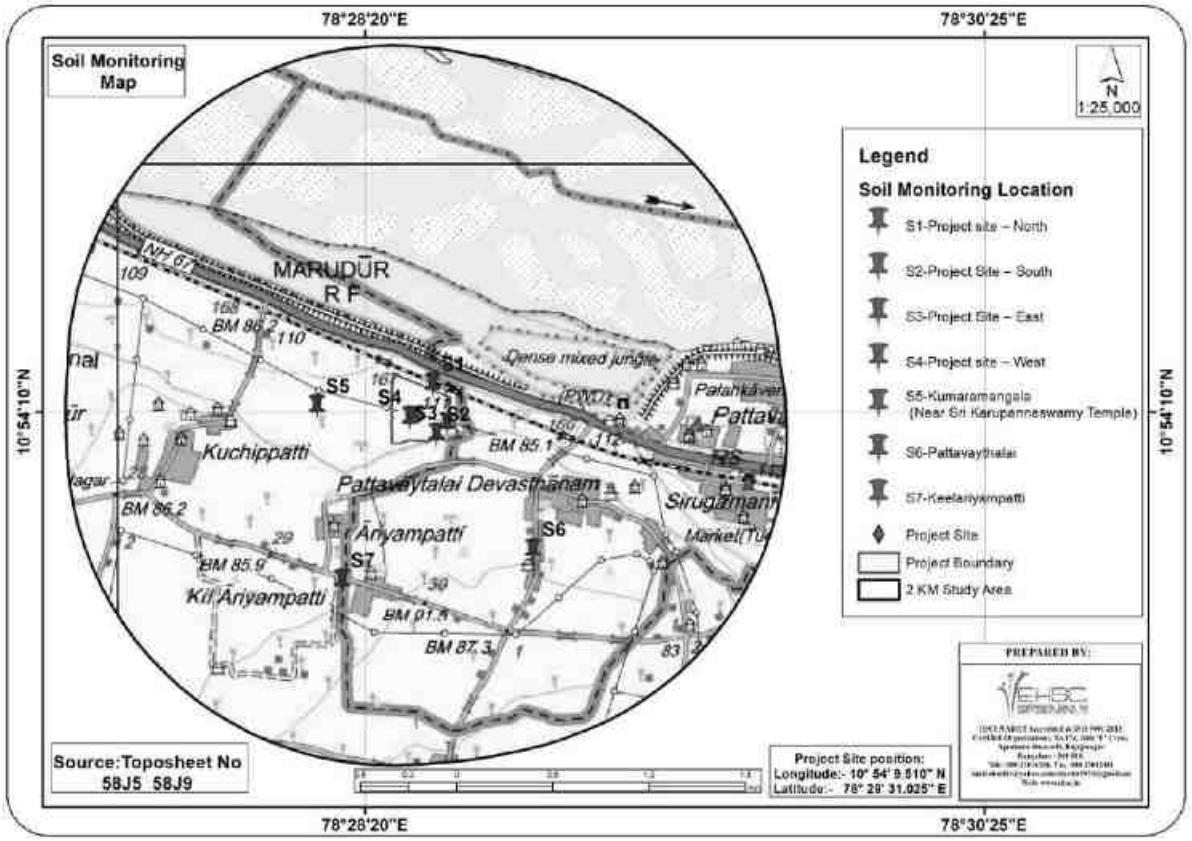


Fig 3.3 Map showing soil sampling locations

	
Project Site – North 10^0 54′15.23”N, 78^0 28′ 33.63”E	Project Site – South 10^0 54′7.32”N, 78^0 28′ 36.59”E

<table>
<tr><td>  </td><td>  </td></tr>
<tr><td>Project Site –East
10^0 54′8.55”N, 77^0 26′ 29.1”E</td><td>Project Site – West
10^0 54′5.17”N, 78^0 28′ 34.42”E</td></tr>
<tr><td>  </td><td>  </td></tr>
<tr><td>Keelariyampatti
10^0 53′35.7”N, 78^0 28′ 15.36”E</td><td>Kumaramangala (Near Sri Karupanna Swamy Temple)
10^0 54′10.81”N, 78^0 28′ 10.27”E</td></tr>
<tr><td>  </td><td>  </td></tr>
<tr><td colspan="2">Pattavaithalai
10^0 53′41.91”N, 78^0 28′ 54.00”E</td></tr>
</table>

Fig 3.4 Photographs of soil sampling

Table 3.5 Soil quality analysis results

Sl. No.	Parameters	Unit	S-1	S-2	S-3	S-4	S-5	S-6	S-7
1	Texture	--	Sandy Loam						
2	Colour	--	Greyish Brown						
3	Bulk Density	gm/cm^3	1.48	1.5	1.56	1.52	1.51	1.54	1.49
4	Moisture Content	Percent	23.17	15.47	8.87	36.34	27.51	13.04	25.43
5	pH		7.93	7.7	7.84	7.55	7.66	7.8	7.94
6	Electrical Conductivity	µS/cm	186.3	311	329	1436	894	810	189.4
7	Magnesium	meq/L	5.2	8.3	7.4	13.3	7.6	3	4.4
8	Calcium	meq/L	18.2	17.4	12.8	29.4	16.9	19.6	22.3
9	Sodium Absorption ratio	--	1.98	2.09	1.39	4.15	4.78	3.69	2.75
10	Sodium	mg/100g	15.63	17.28	10.2	44.13	38.49	28.55	23.17
11	Organic Carbon	Percent	1.68	1.44	1.8	0.6	0.66	0.48	1.2
12	Organic Matter	Percent	2.89	2.48	3.1	1.03	1.13	0.82	2.06
13	Available Potassium	kg/ha	512.4	696.99	1208.73	1043.36	632.74	501.23	344.8
14	Available Phosphorous	kg/ha	224.5	250.07	319.7	277.07	188.97	171.92	139.24
15	Cation Exchange Capacity	meq/100gm	22.56	21.17	24.99	18.39	15.27	14.92	17
16	Available Nitrogen	kg/ha	617.16	508.5	592.7	290.07	302.68	297.66	501.76
17	Sulphur	mg/100g	0.6	0.8	0.86	1.25	1.08	1.02	0.79
18	water Holding Capacity	Percent	47.75	47.68	39.99	48.18	38.98	38.04	35.85
19	Percent Sodium	Percent	7.64	6.64	2.71	10.57	14.72	13.43	13.21
20	Porosity	Percent	38.33	37.23	35.8	38.7	35.74	34.46	37.91
21	Boron	mg/100g	1.37	1.17	1.6	0.51	0.66	0.82	1.02
22	Hexavalent Chromium	µg/gm	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23	Sand	Percent	67.68	67.68	75.68	69.68	69.68	71.68	71.68
24	Soil Salinity	µs/cm	107.8	199	223.7	962.1	616.8	534.6	113.4
25	Clay	Percent	15.04	13.04	9.04	13.04	13.04	9.04	13.04
26	Silt	Percent	17.28	19.28	15.28	17.28	17.28	19.28	15.28
27	Iron as Fe	ppm	30.4	26.4	20.1	17.8	16.7	15.8	15.8
28	Lead as Pb	mg/kg	1.14	1.14	2.24	1.28	0.738	0.561	0.699
29	Zinc as Zn	mg/kg	0.996	1.66	2.67	1.87	1.93	1.67	0.546
30	Total Chromium as Cr	mg/kg	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Sl. No.	Parameters	Unit	S-1	S-2	S-3	S-4	S-5	S-6	S-7
31	Manganese as Mn	mg/kg	10.66	22.2	89.8	20.8	19.7	12.3	12.6
32	Nickel as Ni	mg/kg	BDL	BDL	1.49	BDL	BDL	BDL	BDL
33	Copper as Cu	mg/kg	3.62	4.38	2.97	5.19	3.51	3.07	3.78
34	Molybdenum as Mo	mg/kg	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Note: BDL – Below Detectable Limit

3.4.4 Interpretation

A. Colour

Colour of the soil samples are Greyish brown.

B. pH

pH of soil mainly depends on the soil water ratio. pH of the soil samples ranged between 7.55 (S-4) to 7.94 (S-7), The soil in the project site & study area falls in neutral range of pH. It controls the availability of nutrients, biological functions, microbial activity, and the behavior of chemicals.

C. Electrical conductivity

Electrical Conductivity, as the measure of current carrying capacity, gives a clear picture of the amount of soluble salts present in the soil. The EC values of the soil samples varied from 311 µS/cm(S-2)(Normal) to 1436 µS/cm (S-4) (Critical). The overall salt index reveals that the soil samples of all locations are are normal in nature except for S-4.

The classes of salinity and EC are as given below[2]

Sl. No.	EC Values (µs/cm)		No of samples
1	<1000	Normal	6
2	1000-2000	Critical	1
3	>2000	Injurious	Nil

D. Organic Carbon

The percent Organic Carbon was found to be in the range of 0.48 (S-6) to 1.68 (S-1) indicating Medium & High nutrient ratings., soil total N content and other soil properties such as water-holding capacity and microbiological activity.

Sl. No.	OC Values (%)		No of samples
1	<0.40	Low	Nil
2	0.40-0.75	Medium	3
3	>0.75	High	4

[2] Derived from Natural Resources Conservation Service Soil Survey Handbook

E. Available Nitrogen

The available nitrogen ranged between 208.04 kg/ha (S-4) to 425.49 kg/ha (S-3). As per Soil Health Card map prepared by Soil and Land use Survey of India, the available nitrogen Content in the study area is found to be ranging between low (<280 kg/Ha) criteria.

Sl. No.	N Values (Kg/Ha)		No of samples
1	<272	Nil	2
2	272-554	Nil	5
3	>554	10	Nil

F. Available Phosphorus

The available phosphorous content in the study area soil samples ranged between 290.07 kg/ha (S4) to 617.16 kg/ha (S1) indicating high nutrient rating.

Sl. No.	P Values (Kg/Ha)		No of samples
1	<12.4	Low phosphorous	Nil
2	12.4-22.4	Medium phosphorous	Nil
3	>22.4	Adequate phosphorous	Nil
4	Still higher	Abundant phosphorous	7

G. Available Potassium as K

The available potassium values were found to be ranging between 344.8 kg/ha (S-7) to 1208.73 kg/ha (S-3) indicating medium and High nutrient rating.

Sl. No.	K Values (Kg/Ha)		No of samples
1	<113	Deficient supply	Nil
2	113-280	Doubtful supply	Nil
3	>280	Adequate supply	7

H. Fertility Status of soils

Based on the results and nutrient indices, it is possible to classify nutrient status of the particular area and classify each nutrient level i.e., low, medium or high based on a rating chart, which was made use of while rating the soil analysis results, as follows:

Table 3.6 Rating Chart for Soil Test values and their Nutrient Indices

A. Soil pH				
Sl. No	**Character**	**Acidity**	**Neutral**	**Alkaline**
1	pH Range	Below 6	6-8	Above 8
2	Soil Reaction Index	I	II	III
B. Electrical Conductivity				
Sl. No	**Character**	**Normal**	**Critical**	**Injurious**
1	Range (µmhos/cm)	Below 1000	1000-2000	above 2000
2	Salt index	I	II	III
C. Organic Carbon				
Sl. No	**Character**	**Low**	**Medium**	**High**
1	Range (%)	Below 0.5	0.5-0.75	Above 0.75

2	Nutrient index	I	II	III
D. Available Phosphorus				
Sl. No	**Character**	**Low**	**Medium**	**High**
1	Range (Kg/ha)	Below 22	22-54	Above 54
2	Nutrient index	I	II	III
E. Available Potassium				
Sl. No	**Character**	**Low**	**Medium**	**High**
1	Range (Kg/ha)	Below 123	123-296	Above 296
2	Nutrient index	I	II	III

Table 3.7 Parameters of Fertility Status

Nutrient Index	Range	Remarks (OC, N, P, K)
I	Below 1.67	Low
II	1.67-2.33	Medium
III	Above 2.33	High

Nutrient index: The nutrient index values are evaluated for the soil samples analyzed using the following formula:

Nutrient index= [(1x No. of samples in low category) + (2 x No. Samples in medium category) + (3 x No. of samples in high category)] / Total number of samples. The values are:

Sl. No	Characteristics	Nutrient index	Remarks
1	Organic carbon (OC)	2.14	Medium
2	Available Phosphorus (P)	3	High
3	Available potash (K)	3	High
4	pH	2	Medium
5	Electrical Conductivity	1	Low

3.5 Meteorology

The meteorological data recorded during the monitoring period is a useful tool for the interpretation of the baseline condition as well as for the input, to predictive models for air quality modelling and dispersion studies. Historical data on meteorological parameters also plays an important role in identifying the general meteorological status of the region.

3.5.1 Methodology

Meteorological monitoring was carried out at project site during October 2024. Watchdog 2900 ET was installed at site which records Solar Radiation (Watt / sq. m), Relative Humidity (%), Temperature (°C), Rainfall (mm), Wind Direction (Deg), Wind Gust (km/hr), Wind Speed (km/hr) and Dew Point (°C).

3.5.2 Secondary Data

Available Secondary meteorological data (for the year 1991-2020) was obtained from IMD for Bangalore, from where the meteorological data (Temperature, Relative Humidity, Cloud cover Rainfall, Wind speed, etc.,) were collected.

Table 3.8 Meteorological Data for Tiruchirapalli (1991-2020)

Month	Mean Max in deg.Cel	Mean Min in deg.Cel	Mean RH % at 0830 hrs	Mean RH % at 1730 hrs.	Mean of Av. Wind speed for 24 hrs. in kmph	Total Rainfall in mm	Mean of Station level pressure in hpa		Cloud Cover (in okta)	
							0830 hrs.	1730 hrs.	0830 hrs.	1730 hrs.
Jan	30.7	20.7	81	53	8.5	6.4	23.9	21.3	3.7	3.7
Feb	33.1	21.6	78	42	8.4	4.0	24.9	19.8	3.4	3.0
Mar	36.0	23.5	75	37	8.0	3.6	27.4	20.1	3.4	3.0
Apr	37.8	26.2	71	42	7.9	34.1	30	24.1	4.0	4.3
May	38.2	26.8	67	44	9.8	78.9	28.7	25.7	4.3	4.9
Jun	37.1	26.7	64	45	13.2	44.9	26.7	24.6	5.0	5.6
Jul	36.5	26.4	64	45	14.7	57.4	26	24.1	5.3	5.8
Aug	36	25.8	67	48	12.8	87.7	26.3	24.5	5.3	5.7
Sep	35.4	25.2	71	52	9.9	118.2	27	25.5	4.9	5.6
Oct	33.1	24.4	79	64	7.2	154.9	28.5	27.4	5.3	5.8
Nov	30.6	23.1	83	71	6.8	191.1	27.6	26.9	5.3	5.6
Dec	29.7	21.5	82	66	7.9	79	24.9	24.2	4.6	4.9

Source: IMD Data 1991-2020

3.5.3 Primary Data

The prevailing micrometeorology at project site plays a crucial role in transport and dispersion of sir pollutant released due to the proposed activity. Micro-meteorological data was collected at site. The methodology adopted for monitoring surface observation is as per the standards and India Meteorological Department (IMD). The meteorological data (average) are presented below;

Table 3.9 Meteorological data collected at site

Month		Wind Speed	Wind Direction	Air Temperature	Relative Humidity	Pressure	Solar Radiation	Rainfall	Cloud Cover	Mixing Height
		m/s	degrees	C	%	hPa	W/m²	mm	10th	m
October	**Max**	6.5	357.9	35.1	100.0	1002.7	1007.7	17.3	10.0	2213.8
	Min	0.0	4.1	21.4	31.3	995.3	0.0	0.0	0.0	0.0
	Avg	2.6	178.9	27.7	71.6	1000.1	258.0	0.1	1.2	670.3
November	**Max**	6.4	352.8	34.2	100.0	1002.4	1007.8	18.2	10.0	2213.4
	Min	0.0	3.9	21.8	30.2	995.1	0.0	0.0	0.0	0.0
	Avg	2.8	164.2	26.4	71.1	1000.1	257.2	224.1	1.1	670.1
December	**Max**	6.2	328.6	34.8	100.0	1002.2	1007.4	19.3	10.0	2213.1
	Min	0.0	4.6	20.9	31.3	995.2	0.0	0.0	0.0	0.0
	Avg	2.2	182.3	24.3	71.4	1000.1	254.0	61.8	1.1	670.0

Table 3.10 Comparison of Secondary & Primary Data

Sl. No.	Parameter	Secondary Data	Primary Data
		Year – 1991 – 2020 Tiruchirapalli (A)	Year - 2024
		October-December	October-December
1	Temperature (°C)	33.1	27.7
2	Rainfall (mm)	191.1	224.1
3	Avg Wind Speed (m/s)	7.9	2.8
4	Humidity (%)	83	71.6
5	Cloud Cover (%)	5.8	1.2
6	Pressure (mb)	28.5	1000.1

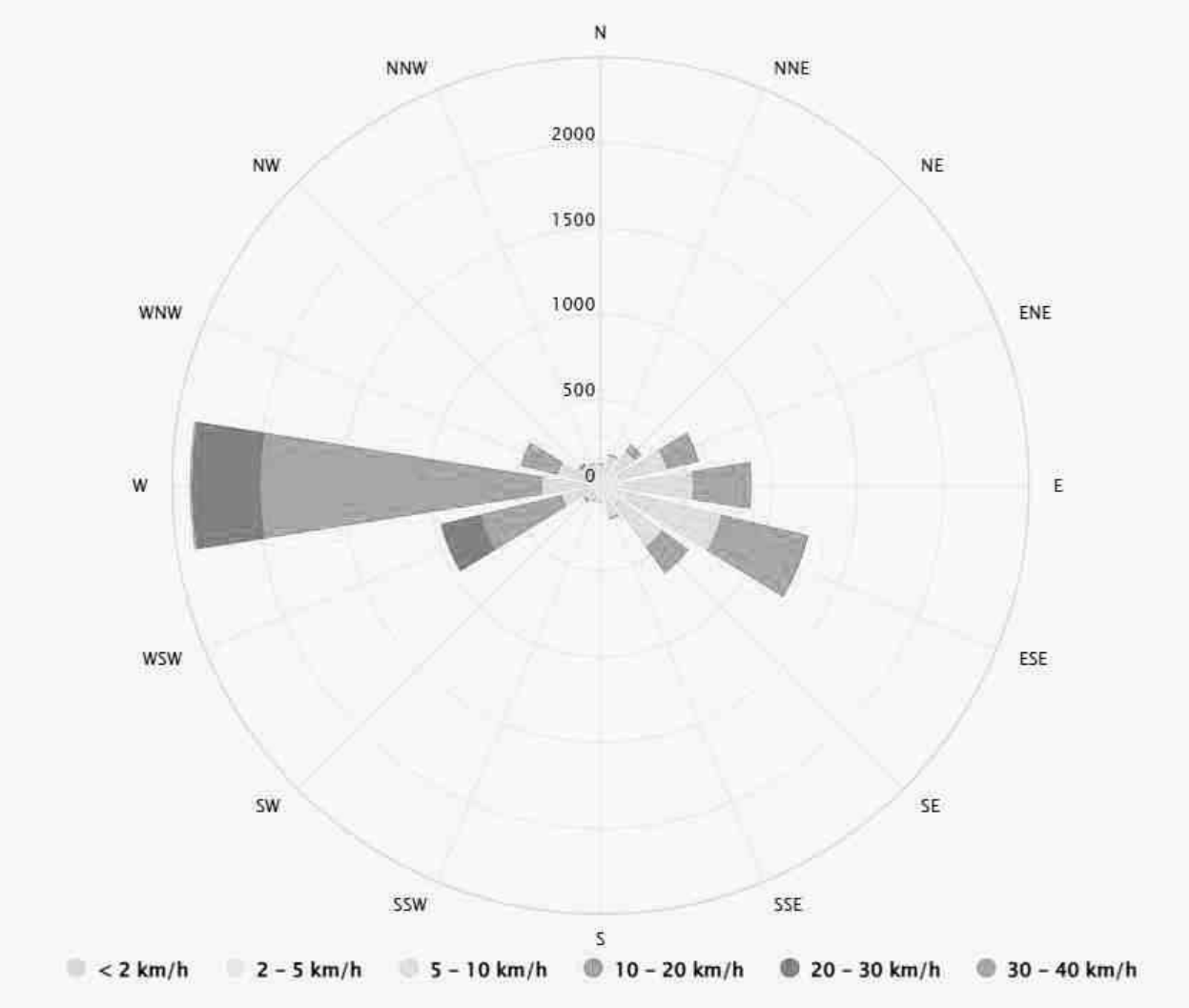


Fig 3.5 Wind rose Diagram

Wind rose shows that the prevailing wind direction during the study period is N,NE,W,NW upwind direction. Down wind direction is towards SW, SE.

Mixing Height/Inversion

- Mixing height is the region between the bottom of the inversion layer and the ground. The inversion layer is a dynamic region, which changes depending on the atmospheric condition. The mixing height can be calculated based on the vertical temperature profile of the atmosphere.
- It shows from the table that, maximum mixing height of 980 mt above ground level is observed while the minimum mixing height observed is 80 mt.

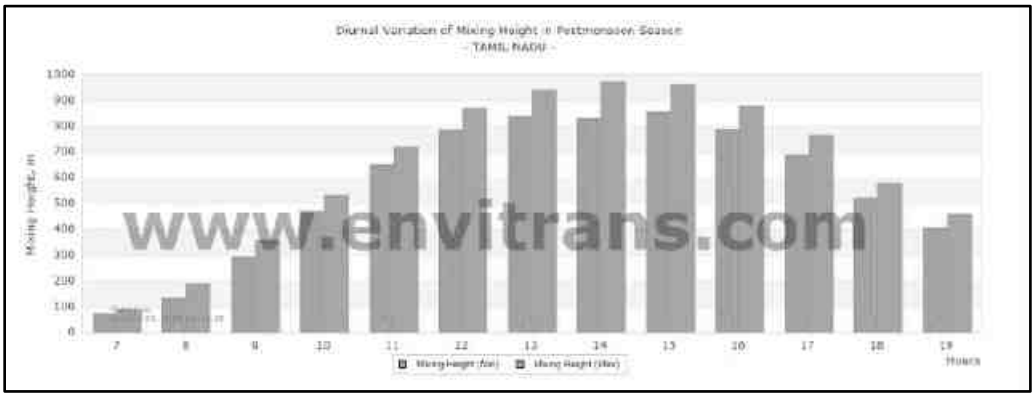


Fig 3.6 Diurnal Variation of Mixing Height in Summer Season for Tamil Nadu[3]

3.5.4 Interpretation

The secondary data recorded during study period for average temperature, Wind speed, cloud cover and humidity is higher when compared to the primary data. Similarly, the secondary data recorded during study period for rainfall and pressure is lower when compared to the primary data.

3.6 Ambient Air Quality Monitoring

3.6.1 Methodology

The study area includes human settlement, reserve forests and open areas. The Ambient Air Quality monitoring was carried out at 12 locations including 5 upwind, 5 downwind and 1 crosswind direction.

The list of parameters monitored, sampling locations, analytical techniques and frequency of monitoring is as mentioned below:

Table 3.11 Analysis Methods of AAQ

Sl. No	Parameter	Frequency of Monitoring	Analysis Method	NAAQM Standards, 2009	Instrument Details
1.	Particulate Matter (PM_{10})		IS:5182(P23)-2006	100 µg/m^3	Gravimetric Method

[3] www.envitrans.com

Sl. No	Parameter	Frequency of Monitoring	Analysis Method	NAAQM Standards, 2009	Instrument Details
2.	Particulate Matter ($PM_{2.5}$)	Twice in week for 24 Hrs	USEP A 40 CFR (P53)	60 µg/m^3	Gravimetric Method
3.	Sulphur Dioxide (SO_2)		IS:5182(P2)-2001	80 µg/m^3	Improved West & Gaeke Method
4.	Nitrogen Dioxide (NO_2)		IS:5182 (P6) - 2006	80 µg/m^3	Modified Jacob & Hochheister Method
5.	Lead (Pb)		USEP A method IO – 3.4	1.0 µg/m^3	ICP-OES Method
6.	Nickel (Ni)			20.0 ng/m^3	
7.	Arsenic (As)			6.0 ng/m^3	
8.	Carbon Monoxide (CO)		IS: 5182 (P 10) - 1999	4.0 mg/m^3	Non-Dispersive Infrared Spectroscopy
9.	Ozone (O_3)		-	180 µg/m^3	Chemical Method
10.	Ammonia (NH_3)		Method 401 – Air Sampling and Analysis, APHA, 3rd Edition	400 µg/m^3	Indophenol Blue Method
11.	Benzene (C_6H_6)		IS:5182(P11) – 2006	5.0 µg/m^3	Adsorption and Desorption followed by GC Analysis
12.	Benzo (a) pyrene (BaP)		IS:5182 (P12) – 2004	1.0 ng/m^3	Solvent Extraction followed by GC Analysis

3.6.2 Secondary Data

As per the AAQMS data of TNPCB for the month of August, 2024, the AQI of Karur District is found to be Good (25-37) with PM_{10} being the prominent pollutant. SO_2 ranges from 7-9, NO_2 ranges from 8-11, CO ranges from 0.1-0.3, $PM_{2.5}$ ranges from 12-16 and PM_{10} ranges from 25-37[4].

3.6.3 Primary Data

AAQM was carried out at 12 locations including 5 upwind, 5 downwind and 1 crosswind direction. The baseline status of the ambient air quality has been assessed and considered on following considerations:

- Meteorological conditions on synoptic scale.
- Topography of the study area.
- Representatives of regional background air quality for obtaining baseline status.

[4] https://tnpcb.gov.in/

- Representatives of likely impact areas.
- Major human settlements in the area.
- Height of the inlet was maintained at 3 ± 0.5 m above the ground.
- The sampler was kept more than 20 m away from trees and other obstacles.
- There was unrestricted airflow in three of four quadrants.
- There was no nearby furnace or incinerator fumes.
- The sampling stations selected were away from major pollution sources.

The monitoring locations were selected on the basis of even distribution over the study area considering various factors like topography of the region, sensitive establishment, human settlements and industrial activities in the study area. The details of ambient air quality sampling locations are given below:

Table 3.12 Details of Ambient Air Quality Stations

Sampling Stations	Code	Distance w.r.t to project site in Km	Direction w.r.t to project Site	Latitude	Longitude	Criteria for selection based on wind regime
Project Site	A1	-	-	10^0 54′6.29″ N	78^0 28′ 37.29″ E	To know the baseline concentration of the project site.
Ayyampalayam	A2	6.28 Km	SW	10^0 55′19.8″ N	78^0 30′ 5.66″ E	Ayyampalayam is in upwind direction at a distance of 6.28 Km in South West direction.
Kollukattipalayam	A3	8.09 Km	SW	10^0 56′38.35″ N	78^0 30′ 32.19″ E	Kollukattipalayam is in upwind direction at a distance of 8.09 Km in South West direction.
Musiri	A4	5.86 Km	NW	10°56'51.44"N	78°26'31.60"E	Musiri is in upwind direction at a distance of 5.86 km in North West direction.
Karuppampatti	A5	2.49 Km	NE	10^0 55′49.23″ N	78^0 31′ 31.63″ E	Karuppampatti is in Upwind direction at a distance of 2.49 km in North East direction.
Kuchipatti	A6	1.47 Km	W	10^0 53′54.56″ N	78^0 27′ 38.12″ E	Kuchipatti is in Downwind direction at a distance of 1.47 Km in West direction.
Panikkampatti	A7	3.97 Km	SW	10^0 52′23.13″ N	78^0 27′ 5.08″ E	Panikkampatti in Downwind direction at a distance of 3.97 Km in South Wesr direction.
Karungalpatti	A8	6.03 Km	W	10°53'57.87"N	78°25'6.86"E	Karungalpatti in Downwind direction at

Sampling Stations	Code	Distance w.r.t to project site in Km	Direction w.r.t to project Site	Latitude	Longitude	Criteria for selection based on wind regime
						a distance of 6.03 Km in West direction.
Adinattam	A9	2.10 Km	S	10^0 52′55.74” N	78^0 28′ 35.73” E	Adinattam in Crosswind direction at a distance of 2.10 Km in South direction.
Kulithalai	A10	6 Km	NW	10°55'59.58"N	78°25'36.95"E	Kulithalai in upwind direction at a distance of 6 Km in North West direction.
Pettavaithalai	A11	1.82	SW	10°53'27.11"N	78°29'24.56"E	Pettavaithalai in downwind direction at a distance of 1.82 Km in South West direction.
Korapatti	A12	4.27	SW	10°52'43.41"N	78°30'32.23"E	Korapatti in downwind direction at a distance of 4.27 Km in South West direction.



Project site
10^0 52′23.13” N, 78^0 27′ 5.08” E



Ayyampalayam
10^0 55′19.8” N, 78^0 30′ 5.66” E



Kollukattipalayam
10^0 56′38.35” N, 78^0 30′ 32.19” E



Karuppampatti
10^0 55′49.23” N, 78^0 31′ 31.63” E

	
Adinattam 10^0 52′55.74” N, 78^0 28′ 35.73” E	Kulitalai 10°56'18.65"N, 78°25'24.70"E

Fig 3.8 Photographs of AAQM

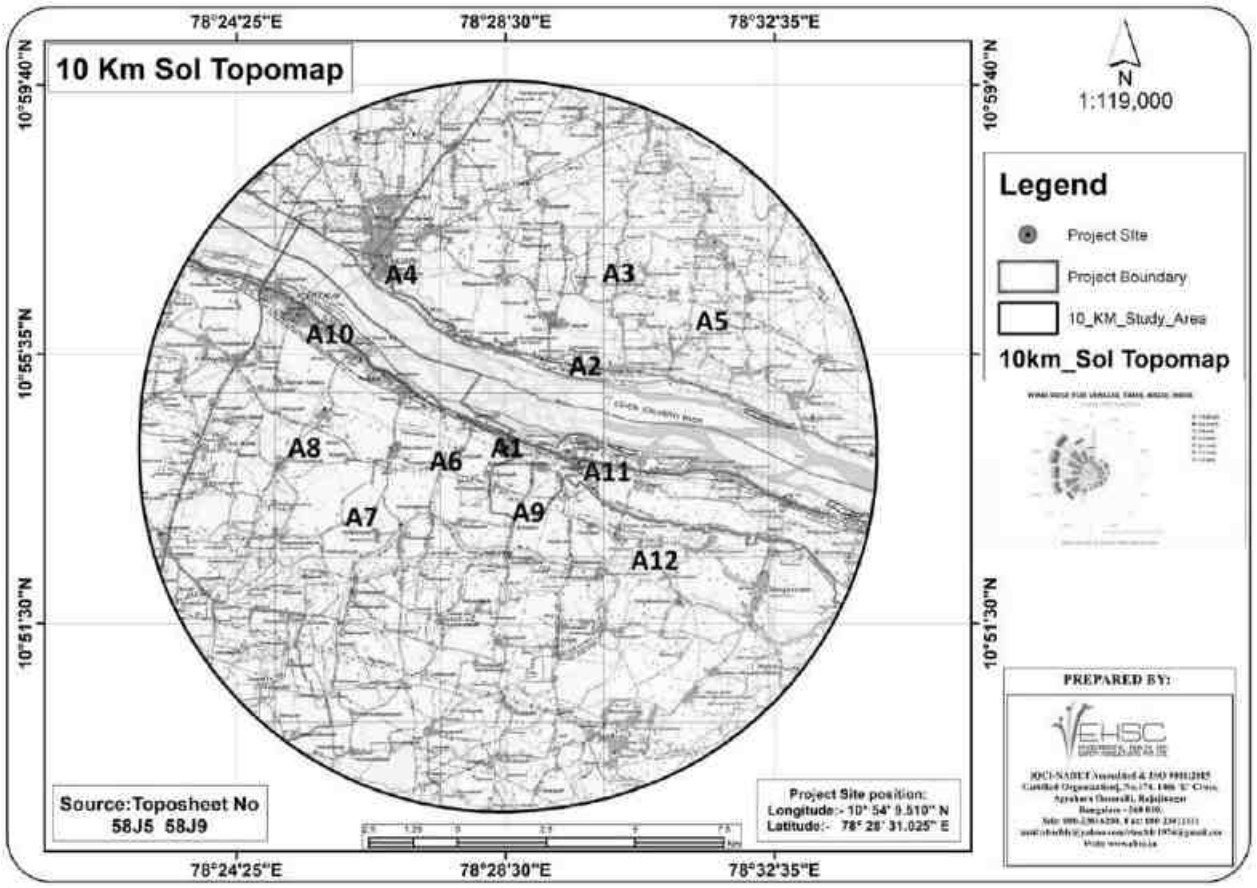


Fig 3.7 Location of AAQM Stations

Table 3.13 Ambient Air Monitoring Results (October, 2024 to December, 2024)

Pollutants			PM_{10}	$PM_{2.5}$	SO_2	NO_2	CO	O_3	NH_3	Pb	As	Ni	C_6H_6	BaP
Sampling Period/Method			24 Hrs	24 Hrs	24 Hrs	24 Hrs	1Hr	1Hr	24 Hrs	24 Hrs	24 Hrs	24 Hrs	24 Hrs	24 Hrs
Units			µg/m³	µg/m³	µg/m³	µg/m³	mg/m³	mg/m³	µg/m³	µg/m³	ng/m³	ng/m³	µg/m³	ng/m³
Detection Limit			5	5	3	5	1	1	3	0.01	1	1	0.1	0.01
NAAQS 2009 - Permissible Limits			100	60	80	80	4	180	400	1	6	20	5	1
A1	Project Site	Maximum	52.6	22.4	10.42	11.76	1.02	14.52	7.4	BDL	BDL	BDL	BDL	BDL
		Minimum	45.1	16.9	8.73	8.02	0.75	12.30	6.15	BDL	BDL	BDL	BDL	BDL
		Average	48.73	19.38	9.51	10.56	0.87	13.54	6.17	BDL	BDL	BDL	BDL	BDL
		98 %tile	52.32	22.22	10.36	11.75	1.0	14.51	7.36	BDL	BDL	BDL	BDL	BDL
A2	Ayyampalayam	Maximum	56.7	25.3	11.51	14.15	1.19	15.39	7.67	BDL	BDL	BDL	BDL	BDL
		Minimum	47.1	18.5	9.3	9.17	0.82	12.83	6.31	BDL	BDL	BDL	BDL	BDL
		Average	51.93	21.73	10.40	12.38	0.98	14.25	6.98	BDL	BDL	BDL	BDL	BDL
		98 %tile	56.56	24.98	11.47	14.10	1.17	15.37	7.63	BDL	BDL	BDL	BDL	BDL
A3	Kollukattipalayam	Maximum	54.9	24	11.49	13.67	1.07	15.24	7.48	BDL	BDL	BDL	BDL	BDL
		Minimum	46	16.3	8.45	8.71	0.65	11.98	6.18	BDL	BDL	BDL	BDL	BDL
		Average	50.58	19.96	10.00	11.76	0.84	13.52	6.89	BDL	BDL	BDL	BDL	BDL
		98 %tile	54.53	23.59	11.36	13.63	1.03	15.13	7.45	BDL	BDL	BDL	BDL	BDL
A4	Musiri	Maximum	60.1	25.2	12.04	14.2	1.25	15.61	7.05	BDL	BDL	BDL	BDL	BDL
		Minimum	51.5	20.1	10.73	9.74	0.86	12.48	6.14	BDL	BDL	BDL	BDL	BDL
		Average	55.14	23.41	11.72	12.46	1.03	14.16	6.56	BDL	BDL	BDL	BDL	BDL
		98 %tile	59.27	25.15	12.67	13.93	1.22	15.51	7.01	BDL	BDL	BDL	BDL	BDL
A5	Karuppampatti	Maximum	59.9	26.9	12.05	14.14	1.3	15.24	7.33	BDL	BDL	BDL	BDL	BDL
		Minimum	53.8	21.7	9.94	9.06	0.91	12.44	6.05	BDL	BDL	BDL	BDL	BDL
		Average	57.06	24.63	10.98	12.76	1.12	14.02	6.79	BDL	BDL	BDL	BDL	BDL
		98 %tile	59.81	26.67	11.96	14.11	1.27	15.24	7.32	BDL	BDL	BDL	BDL	BDL
A6	Kuchipatti	Maximum	58.7	25.5	10.95	13.49	1.29	15.2	7.51	BDL	BDL	BDL	BDL	BDL
		Minimum	51.7	19.7	8.57	8.14	0.88	12.44	6.53	BDL	BDL	BDL	BDL	BDL
		Average	55.28	22.65	9.59	12.48	1.06	13.98	6.97	BDL	BDL	BDL	BDL	BDL
		98 %tile	58.38	25.36	10.79	13.13	1.28	15.16	7.48	BDL	BDL	BDL	BDL	BDL
A7	Panikkampatti	Maximum	50.7	20.5	11.15	13.62	0.95	14.75	6.92	BDL	BDL	BDL	BDL	BDL
		Minimum	42	14	8.95	8.94	0.62	11.57	5.75	BDL	BDL	BDL	BDL	BDL
		Average	46.43	17.64	9.96	11.06	0.75	13.02	6.38	BDL	BDL	BDL	BDL	BDL
		98 %tile	50.47	20.41	11.06	13.34	0.93	14.46	6.91	BDL	BDL	BDL	BDL	BDL
A8	Karungalpatti	Maximum	52.9	23.2	12.08	13.64	0.93	15.04	6.82	BDL	BDL	BDL	BDL	BDL
		Minimum	44	16.1	9.56	8.94	0.65	11.78	5.48	BDL	BDL	BDL	BDL	BDL

Pollutants			PM_{10}	$PM_{2.5}$	SO_2	NO_2	CO	O_3	NH_3	Pb	As	Ni	C_6H_6	BaP
Sampling Period/Method			24 Hrs	24 Hrs	24 Hrs	24 Hrs	1Hr	1Hr	24 Hrs	24 Hrs	24 Hrs	24 Hrs	24 Hrs	24 Hrs
Units			µg/m³	µg/m³	µg/m³	µg/m³	mg/m³	mg/m³	µg/m³	µg/m³	ng/m³	ng/m³	µg/m³	ng/m³
Detection Limit			5	5	3	5	1	1	3	0.01	1	1	0.1	0.01
NAAQS 2009 - Permissible Limits			100	60	80	80	4	180	400	1	6	20	5	1
		Average	48.40	19.78	9.94	11.15	0.79	13.00	6.16	BDL	BDL	BDL	BDL	BDL
		98 %tile	52.59	22.83	11.06	13.34	0.91	14.77	6.76	BDL	BDL	BDL	BDL	BDL
A9	Adinattam	Maximum	57.4	25.7	12.08	13.88	1.03	15.12	7.05	BDL	BDL	BDL	BDL	BDL
		Minimum	46.5	18.3	9.56	10.09	0.71	12.15	5.58	BDL	BDL	BDL	BDL	BDL
		Average	52.38	22.38	10.85	12.13	0.85	13.73	6.23	BDL	BDL	BDL	BDL	BDL
		98 %tile	57.12	25.56	11.92	13.67	1.00	14.91	6.97	BDL	BDL	BDL	BDL	BDL
A10	Kulithalai	Maximum	53.9	21.0	10.90	12.35	0.86	14.02	7.24	BDL	BDL	BDL	BDL	BDL
		Minimum	42.7	15.1	8.42	8.25	0.58	11.47	5.69	BDL	BDL	BDL	BDL	BDL
		Average	47.67	18.46	9.65	10.62	0.71	12.83	6.24	BDL	BDL	BDL	BDL	BDL
		98 %tile	52.89	20.86	10.75	12.27	0.86	13.95	7.05	BDL	BDL	BDL	BDL	BDL
A11	Pettavaithalai	Maximum	55.0	25.1	10.81	13.23	0.90	14.45	6.91	BDL	BDL	BDL	BDL	BDL
		Minimum	46.6	17	9.18	9.10	0.63	12.11	5.54	BDL	BDL	BDL	BDL	BDL
		Average	50.54	20.46	10.10	11.29	0.74	13.14	6.18	BDL	BDL	BDL	BDL	BDL
		98 %tile	54.77	24.69	10.81	13.16	0.88	14.30	6.84	BDL	BDL	BDL	BDL	BDL
A12	Korpatti	Maximum	57.5	22.4	10.80	13.38	0.94	14.63	6.77	BDL	BDL	BDL	BDL	BDL
		Minimum	45.3	14.8	8.75	8.85	0.60	11.83	5.32	BDL	BDL	BDL	BDL	BDL
		Average	51.78	18.42	10.06	11.33	0.74	13.24	6.05	BDL	BDL	BDL	BDL	BDL
		98 %tile	56.99	21.89	10.74	13.23	0.92	14.61	6.73	BDL	BDL	BDL	BDL	BDL

Table 3.14 Summary of Ambient Air Quality Monitoring Results

LOCATION	PM_{10}, µg/m³	$PM_{2.5}$, µg/m³	SO_2, µg/m³	NO_2, µg/m³	CO, mg/m³	NH_3, µg/m³	O_3, µg/m³
A1	48.73	19.38	9.51	10.56	0.87	6.17	13.54
A2	51.93	21.73	10.40	12.38	0.98	6.98	14.25
A3	50.58	19.96	10.0	11.76	0.84	6.89	13.25
A4	55.14	23.41	11.72	12.46	1.03	6.56	14.16
A5	57.06	24.63	10.98	12.76	1.12	6.79	14.02
A6	55.28	22.65	9.59	12.48	1.06	6.97	13.98
A7	46.43	17.64	9.96	11.06	0.75	6.38	13.02
A8	48.40	19.78	9.94	11.15	0.79	6.16	13

LOCATION	PM 10, μg/m³	PM2.5, μg/m³	SO2, μg/m³	NO2, μg/m³	CO, mg/m³	NH3, μg/m³	O3, μg/m³
A9	52.38	22.38	10.85	12.13	0.85	6.23	13.73
A10	47.67	18.46	9.65	10.62	0.71	6.24	12.83
A11	50.54	20.46	10.10	11.29	0.74	6.18	13.14
A12	51.78	18.42	10.06	11.33	0.74	6.05	13.24

*All the other parameters of NAAQ and Hg were found to be at below detectable limit.

Source=EHSRDC, Bangalore.

Table 3.15 AAQ Index

Location	PM10, μg/m³	AQI	Remarks	PM2.5, μg/m³	AQI	Remarks	SO2, μg/m³	AQI	Remarks	NO2, μg/m³	AQI	Remarks
A1	48.73	48.73	Satisfactory	19.38	32.30	Good	9.51	11.89	Good	10.56	13.20	Good
A2	51.93	51.93	Satisfactory	21.73	36.22	Good	10.40	13	Good	12.38	15.48	Good
A3	50.58	50.58	Satisfactory	19.96	33.27	Good	10.0	12.50	Good	11.76	14.70	Good
A4	55.14	55.14	Satisfactory	23.41	39.02	Good	10.99	13.36	Good	12.46	15.58	Good
A5	57.06	57.06	Satisfactory	24.63	41.05	Good	11.72	14.65	Good	12.76	15.95	Good
A6	55.28	55.28	Satisfactory	22.65	37.75	Good	9.59	11.99	Good	12.48	15.60	Good
A7	46.43	46.43	Satisfactory	17.64	29.40	Good	9.96	12.45	Good	11.06	13.83	Good
A8	48.40	48.40	Satisfactory	19.78	32.97	Good	9.94	12.43	Good	11.15	13.94	Good
A9	52.38	52.38	Satisfactory	22.38	38.97	Good	10.85	13.56	Good	12.13	15.16	Good
A10	47.67	47.67	Satisfactory	18.46	30.77	Good	9.65	12.06	Good	10.62	13.28	Good
A11	50.54	50.54	Satisfactory	20.46	34.10	Good	10.10	12.63	Good	11.29	14.11	Good
A12	51.78	51.78	Satisfactory	18.42	30.70	Good	10.06	12.58	Good	11.33	14.16	Good

Location	CO, mg/m³	AQI	Remarks	NH3, μg/m³	AQI	Remarks	O3, μg/m³	AQI	Remarks
A1	0.87	43.50	Good	6.17	1.5	Good	13.54	13.54	Good
A2	0.98	49	Good	6.98	1.7	Good	14.25	14.25	Good
A3	0.84	42	Good	6.89	1.72	Good	13.25	13.25	Good
A4	1.03	51.50	Good	6.56	1.64	Good	14.16	14.16	Good

Location	CO, mg/m^3	AQI	Remarks	NH_3, μg/m^3	AQI	Remarks	O_3, μg/m^3	AQI	Remarks
A5	1.12	56	Good	6.79	1.70	Good	14.02	14.02	Good
A6	1.06	53	Good	6.97	1.74	Good	13.98	13.98	Good
A7	0.75	37.50	Good	6.38	1.60	Good	13.02	13.02	Good
A8	0.79	39.50	Good	6.16	1.54	Good	13	13	Good
A9	0.85	42.50	Good	6.23	1.56	Good	13.73	13.73	Good
A10	0.71	35.50	Good	6.24	1.56	Good	12.83	12.83	Good
A11	0.74	37	Good	6.18	1.55	Good	13.14	13.14	Good
A12	0.74	37	Good	6.05	1.55	Good	13.24	13.24	Good

As per Air Quality Index, Good and satisfactory ambient air quality can be observed in the study area. The air quality w.r.t SO_2, $PM_{2.5}$, CO, NO_2, NH_3 &O_3 is good

Air Quality Index Formula

$Ip = [\{(I_{HI} - I_{LO})/ (B_{HI} - B_{LO})\} * (Cp - B_{LO})] + I_{LO}$

B_{HI} = Breakpoint concentration greater or equal to given conc.

B_{LO} = Breakpoint concentration smaller or equal to given conc.

I_{HI} = AQI value corresponding to B_{HI}

I_{LO} = AQI value corresponding to B_{LO}

3.6.4 Interpretation

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

3.7 Noise Level Monitoring

3.7.1 Methodology

- Google map or aerial view of the study area covering project location was prepared.
- The ambient Noise Level monitored using Sound Level Meter C-322.
- The sampling locations were selected covering residential, commercial and sensitive areas in the study area with 10 Km radius of the study area.
- The ambient noise level monitoring was carried out within 10 Km radius of the study area at 10 locations considering Industrial, Residential, Commercial and Silent zones & the results were calculated by using the Leq. standard formula
- The ambient noise level monitoring was carried out for 24 hours from 6.00 AM to 10.00 PM (day time) and 10.00 PM to 6.00 AM (night time) as per the guidelines issued by CPCB in July, 2015 and the instruments were kept at 1 m away from the obstructions.

3.7.2 Secondary Data

Not available.

3.7.3 Primary Data

The ambient noise level monitoring was carried out on 04.10.2024 within 10 Km radius of the project site at 8 locations. The details of ambient noise level monitoring stations, monitoring locations on topo sheet & monitoring photographs are given below.

Table 3.16 Details of Ambient Noise Level Monitoring Stations

Station Code	Location Name	Latitude and Longitude	Criteria for selection
N1	Project site	$10^0 54' 6.07"$ N, $78^0 28' 37.33"$ E	Residential Zone
N2	Pettavaithalai	$10^0 53' 56.34"$ N, $78^0 28' 54.72"$ E	Residential Zone
N3	Kuchipatti	$10^0 53' 53.88"$ N, $78^0 27' 37.75"$ E	Residential Zone
N4	Marudur RF	$10^0 54' 20.50"$ N, $78^0 28' 33.22"$ E	Silence Zone
N5	Pettavaythalai Near NH 81 Road	$10^0 54' 5.91"$ N, $78^0 29' 10.59"$ E	Commercial Zone
N6	Nadupatti	$10^0 53' 5.60"$ N, $78^0 27' 22.18"$ E	Residential Zone
N7	Banglapudur	$10^0 52' 28.23"$ N, $78^0 29' 31.15"$ E	Residential Zone
N8	Neyveli	$10^0 55' 59.56"$ N, $78^0 29' 27.29"$ E	Residential Zone

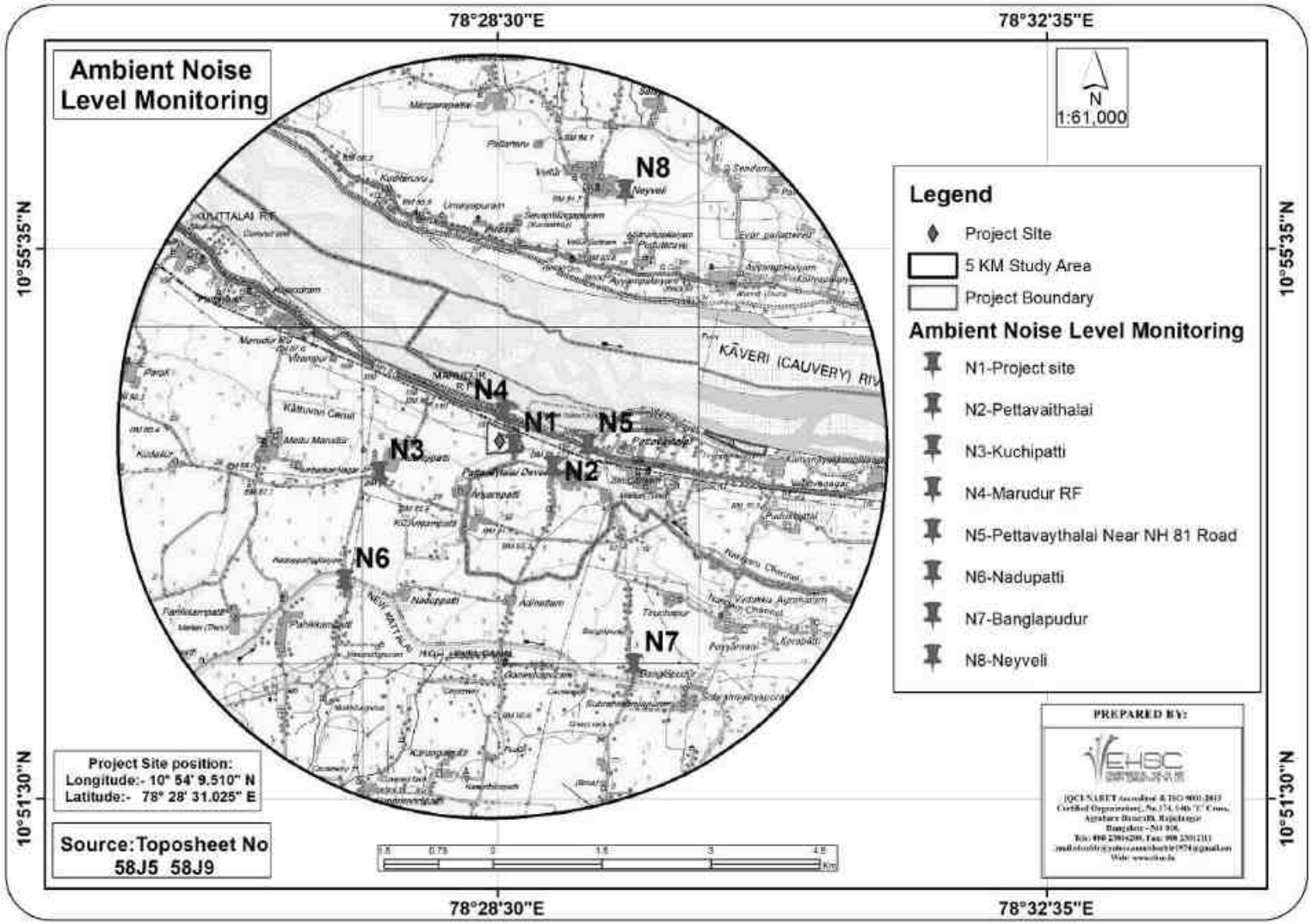


Fig 3.9 Locations of Ambient Noise Level Monitoring Stations

Table 3.17 Ambient Noise Level Monitoring Results

Sl. No.	Location	Leq dB(A) - Day	CPCB Std dB(A), Leq(day)	Leq dB(A) - Night	CPCB Std dB(A), Leq(Night)
1	Project site	53.67	55	43.61	45
2	Pettavaithalai	53.19	55	42.44	45
3	Kuchipatti	52.51	55	52.80	45
4	Marudur RF	48.56	50	38.84	40
5	Pettavaythalai Near NH 81 Road	63.06	65	52.67	55
6	Nadupatti	53.52	55	43.11	45
7	Banglapudur	51.62	55	42.76	45
8	Neyveli	50.56	55	42.09	45



Project site
$10^0 54' 6.07"$ N, $78^0 28' 37.33"$ E



Neyveli
$10^0 55' 59.56"$ N, $78^0 29' 27.29"$ E



Kuchipatti
$10^0 53' 5388"$ N, $78^0 27' 37.75"$ E



Marudur RF
$10^0 54' 20.50"$ N, $78^0 28' 33.22"$ E

Fig 3.10 Photographs of Ambient Noise Level Monitoring

Table 3.18 Statistical behavior of sound level data in Project site & Study period

Location	Project Site		Pattavaithalai		Kuchipatti		Marudur RF		Pattavaythalai Near 81 Road		Nadupatti		Banglapudur		Neyveli	
Durations	Day Time	Night Time	Day Time	Night Time	Day Time	Night Time	Day Time	Night Time	Day Time	Night Time	Day Time	Night Time	Day Time	Night Time	Day Time	Night Time
Standards	55	45	55	45	55	45	50	40	65	55	55	45	55	45	55	45
Number of Exceedance	216	223	55	122	1	191	476	145	203	47	55	120	10	187	65	47
Number of Observation	960	480	960	480	960	480	960	480	960	480	960	480	960	480	960	480
Percentage of Exceedance	22.5	46.46	5.73	25.41	0.01	39.79	49.58	30.2	21.14	9.79	5.73	25	1.04	38.96	6.77	9.79
Maximum	60.6	61.5	73.8	65.9	63.9	61.8	72.7	65	78.9	67.7	61.9	63	68	60.2	71.8	64.9
Minimum	30.8	30.5	32.8	31.5	52	32.4	37	30.2	31.1	40	31.9	32.1	41.1	30.5	36.1	31.1
Standard Deviation	6.29	8.41	5.4	5.81	0.51	8.46	6.4	7.55	10.87	6.19	4.73	5.79	0.78	7.38	6.1	6.95
Median	48.9	39.5	50.5	40.8	52.5	36.9	44.9	37.4	54.4	49.4	53.2	41.3	51.6	37.7	46.9	40.8
L10	58	51.8	52.2	47.7	53	54.9	55.3	45.9	69.8	54.5	53.8	49.8	52.3	48.6	54.4	44.3
L90	41	36.1	39.5	37.7	52.1	36.1	40.5	36.6	47	40.5	49.5	39.3	51.3	31.2	39.6	35.5
L50	48.9	39.5	50.5	40.8	52.5	36.9	44.9	37.4	54.4	49.4	53.2	41.3	51.6	37.7	46.9	40.8
Leq	53.67	43.61	53.19	42.44	52.51	42.8	48.56	38.84	63.06	52.67	53.52	43.11	51.62	42.76	50.56	42.09

3.7.4 Interpretation

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

3.8 Water quality analysis

3.8.1 Methodology

The grab water samples were collected and subjected to analysis for physical, chemical and biological characteristics as per the procedures specified in 'Standard Methods for the Examination of Water and Wastewater' published by American Public Health Association (APHA) and Bureau of Indian Standards (BIS).

Surface water samples (7 Nos., SW-8 location lake was dry) were collected in polyethylene carboys from water bodies. And the Temperature, pH, EC, TDS, TH and TSS were recorded using water testing kit at site. For Dissolved Oxygen, sample was collected in the BOD bottle (300 ml) by adding 1 ml of $MnSO_4$ followed by 1 ml of alkaline iodide reagent and the stopper was placed immediately and bottle was inverted repeatedly for 2-3 times. Further 1 ml of concentrated H_2SO_4 was added to the solution. Similarly, 1 ml of 1:1 HNO_3 was added to 250 ml of water sample for further analysis of heavy metals and Samples for bacteriological analysis were collected in sterilized sampling bottles.

Ground water samples (8 Nos.) from the bore wells/gauzing station were collected using polyethylene carboys after allowing the water to run for about 5 minutes. The Temperature, pH, EC, TDS, TH and TSS were recorded using water testing kit at site and 1 ml of 1:1 HNO_3 was added to 250 ml of water sample for further analysis of heavy metal.

3.8.2 Secondary Data

3.8.2.1 Surface water

As per the National Water Quality Monitoring Program carried out by TNPCB during January, 2023, the Cauvery River water quality results shows that; DO ranges from 5.6 -6.2mg/L, pH ranges from 7.48-8.3, Conductivity ranges from 496-547 mmhos/cm, BOD ranges from <2 -2.4 mg/L, Nitrate ranges from 0.043-0.162 mg/L, Nitrite ranges from 0.032-0.47 mg/L, Fecal Coliform ranges from 14-17 MPN/100 ml, Total coliform ranges from 40-47 MPN/100 ml, Turbidity ranges from 2.5-3 NTU, Total alkalinity ranges from 168-200 mg/L, Chloride ranges from 44 -95 mg/L, COD ranges from 32-48 mg/L, Hardness ranges from 184-280 mg/L, Calcium ranges from 35-48 mg/L, Magnesium ranges from 23-39 mg/L, Total Dissolved Solids ranges from 332-490 mg/L[5].

Further, as per Polluted River Stretches for Restoration of Water Quality (2025) issued by CPCB, MoEF&CC, the stretch of River Cauvery at Erode near Virapalayam to Pitchavaram fall under priority Class III (BOD ranging from 10-20 mg/L). The proposed project site is located along the River Cauvery (600 m from project site) stretch between Musiri and Pettavaithalai wherein the BOD values are 2.4 mg/L and 2.6 mg/L respectively as observed during 2024[6].

3.8.2.2 Ground water

As per CGWB, the depth of wells varies from 6.64 to 17 m bgl. The present water levels in the Karur is in the range of 0.97 to 8.49 m bgl during pre- monsoon (May 2015) and from 0.149 to

[5] https://tnpcb.gov.in/

[6] Polluted River Stretches for Restoration of Water Quality (2025), Water Quality Management (I) Division, Central Pollution Control Board (CPCB) Ministry of Environment, Forests & Climate Change (MoEF & CC).

6.97 m bgl during post monsoon (January 2016)[7]. Further, as per NWM data, the ground water in Kulithalai is categorized as "Safe". Studies have shown that the dominant ions in the groundwater are sodium (Na) and chloride (Cl), which contribute to its salinity and the groundwater is generally moderately to moderately high in salinity[8].

3.8.3 Primary Data

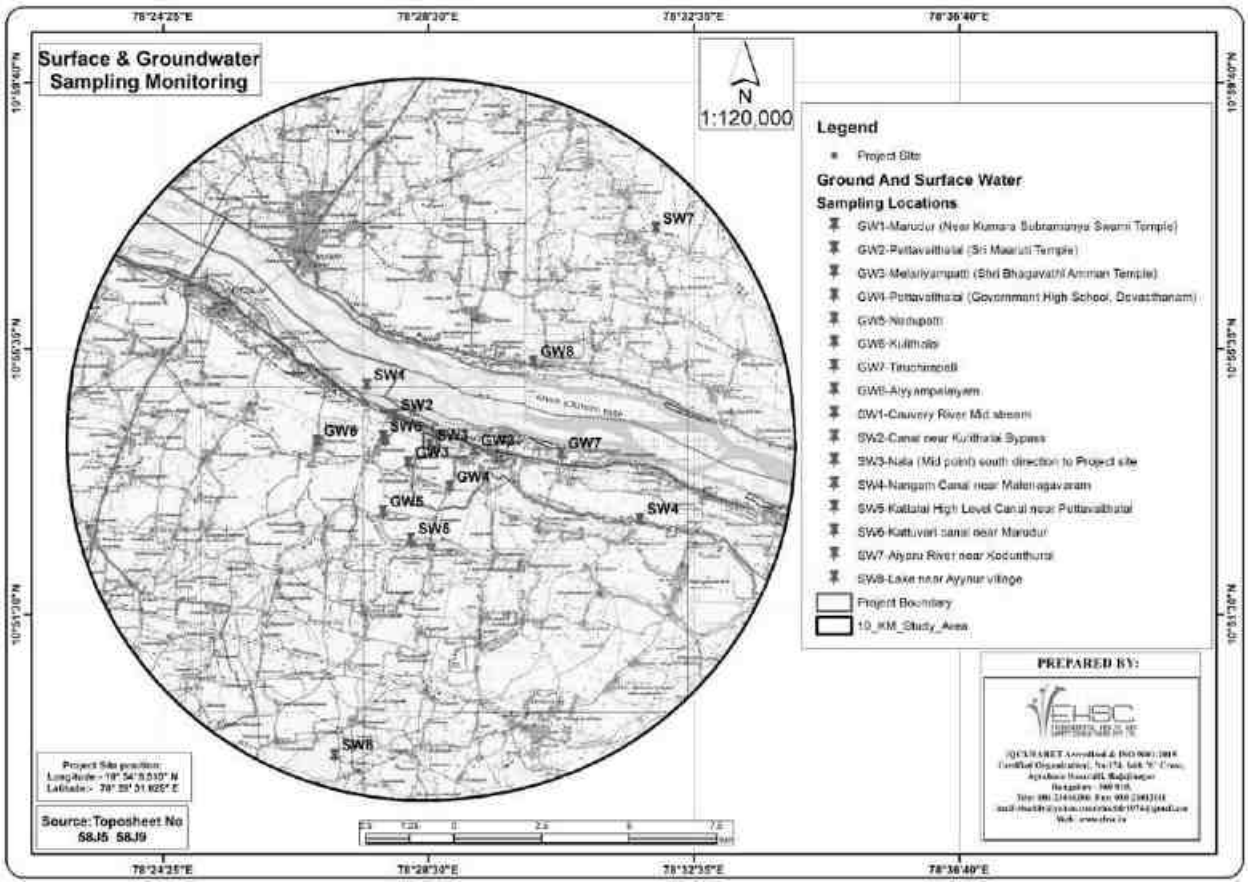


Fig 3.11 Map showing surface and ground water sampling locations





[7] Plan on Artificial Recharge to Groundwater and Water Conservation in Velliyanai Firka, Karur Taluk, Karur District, Tamil Nadu, CGWB, Chennai

[8] https://nwm.gov.in/

Canal near Kulithalai Bypass 10^0 54′ 31.86” N, 78^0 27′ 58.27” E	Nala (Mid-Point) south to project site 10^0 54′ 3.84” N, 78^0 28′ 31.39” E
	
Cauvery River - Mid stream 10^0 54’ 59.59” N, 78^0 27’ 33.56” E	
Surface water sampling	
	
Marudur (Near Kumara Subramanya Swami Temple) 10^0 54′ 8.35” N, 78^0 27′ 50.25” E	Melariyampatti (Shri Bhagavathi Amman Temple) 10^0 53′ 48.11” N, 78^0 28′ 11.60” E
	
Pettavaithalai (Government High School, Devasthanam) 10^0 53′ 25.53” N, 78^0 28′ 49.74” E	Pettavaithalai (Sri Maaruthi Temple) 10^0 53′ 59.054” N, 78^0 29′ 12.25” E
Ground water sampling	

Fig 3.12 Photographs of surface and ground water sampling locations

Table 3.19 Surface & ground water sampling locations

Sl. No.	Location Name	Monitoring date	GPS Coordinates	Distance & Direction	Location selection criteria
Surface water					
SW1	Cauvery River Mid stream	03.10.2024	10^0 54’ 59.59” N, 78^0 27’ 33.56” E	2.02 km (NW)	River
SW2	Canal near Kulithalai Bypass	03.10.2024	10^0 54’ 31.86” N, 78^0 27’ 58.27” E	0.92 km (NW)	Irrigation canal
SW3	Nala (Mid point) south direction to Project site	03.10.2024	10^0 54’ 3.84” N, 78^0 28’ 31.39” E	-	Within project site
SW4	Nangam Canal near Malenagavaram	03.10.2024	10°52'56.08"N, 78°31'45.66"E	6.09 km (W)	Irrigation canal
SW5	Kattalai High Level Canal near Pettavaithalai	03.10.2024	10°52'37.87"N, 78°28'14.01"E	2.73 km (S)	Irrigation canal
SW6	Kattuvari canal near Marudur	03.10.2024	10°54'12.02"N, 78°27'48.38"E	1.15 km (W)	Irrigation canal
SW7	Aiyaru River near Kodunthurai	03.10.2024	10°57'23.88"N, 78°32'0.18"E	8.52 km (NE)	River
SW8	Lake near Ayynur village	03.10.2024	10°49'18.37"N, 78°27'3.59"E	8.61 km (S)	Lake
Ground water					
GW1	Marudur (Near Kumara Subramanya Swami Temple)	03.10.2024	10^0 54’ 8.35” N, 78^0 27’ 50.25” E	1.06 km (W)	Residential area
GW2	Pettavaithalai (Sri Maaruti Temple)	04.10.2024	10^0 53’ 59.05” N, 78^0 29’ 12.25” E	1.05 km (E)	Residential area
GW3	Melariyampatti (Shri Bhagavathi Amman Temple)	03.10.2024	10^0 53’ 48.11” N, 78^0 28’ 11.60” E	0.63 km (SW)	Residential area
GW4	Pettavaithalai (Government High School, Devasthanam)	03.10.2024	10^0 53’ 25.53” N, 78^0 28’ 49.74” E	1.26 km (S)	Residential area
GW5	Nadupatti	03.10.2024	10°53'2.66"N, 78°27'48.43"E	2.21 km (SW)	Residential area
GW6	Kulithalai	03.10.2024	10°54'7.78"N, 78°26'47.32"E	2.93 km (W)	Residential area
GW7	Tiruchirapalli	03.10.2024	10°53'56.56"N, 78°30'32.87"E	2.45 km (E)	Residential area
GW8	Aiyyampalaiyam	03.10.2024	10°55'21.05"N, 78°30'6.96"E	3.41 km (NE)	Residential area

Table 3.20 Surface water quality analysis results

Sl. No	Parameters	Unit	Water Quality Criteria					SW-1	SW-2	SW-3	SW-4	SW-5	SW-6	SW-7
			A	B	C	D	E							
1	pH	-	6.5 & 8.5		6 - 9	6.5 - 8.5	6 - 8.5	8.18	7.98	7.9	7.88	7.92	7.64	7.92
2	Temperature	^{0}C	-	-	-	-	-	26.7	27.3	26.9	26.6	26.4	26.6	26.6
3	Colour	Hazen	-	-	-	-	-	<1	<1	<1	<1	<1	<1	<1
4	Dissolved Oxygen	mg/L	6	5	4	4	-	5.3	5.6	5.7	5.1	5.2	5.3	5.1
5	BOD (3 Days@27^{0}C)	mg/L	2	3	3	-	-	2.4	2.2	1.8	6.5	5.5	4.5	6.6
6	COD	mg/L	-	-	-	-	-	8.2	12	8	28.0	40.0	28	40
7	Turbidity	NTU	-	-	-	-	-	0.97	1.26	4.19	3.20	1.20	1.26	2.20
8	Electrical Conductivity	µS/cm	-	-	-	-	2250	465	410	527	429	432	684	755
9	Total Suspended Solids	mg/L	-	-	-	-	-	15	7	10	17	8	12	14
10	Total Dissolved Solids	mg/L	-	-	-	-	-	260	243	364	273	258	395	424
11	Total Hardness	mg/L	-	-	-	-	-	96	90	148	98	96	140	150
12	Alkalinity as $CaCO_3$	mg/L	-	-	-	-	-	110	104	162	104	108	160	158
13	Ammonical Nitrogen	mg/L	-	-	-	-	-	0.44	0.56	0.56	0.56	0.67	0.78	0.67
14	Nitrate as NO_3	mg/L	-	-	-	-	-	1.51	2.19	5.08	1.94	2.70	6.39	6.22
15	Chloride as Cl^-	mg/L	-	-	-	-	-	38.15	36.2	55.76	40.40	41.39	58.14	73.91
16	Sulphate as SO_4	mg/L	-	-	-	-	-	26.65	22.12	40.45	26.20	22.52	39.77	39.51
17	Total Nitrogen	mg/L	-	-	-	-	-	8.2	9.19	13.18	7.98	9.71	13.57	14.49
18	Total Kjeldahl Nitrogen	mg/L	-	-	-	-	-	1.68	1.12	1.68	1.68	2.24	1.68	2.24
19	Potassium as K	mg/L	-	-	-	-	-	3.33	3.47	8.86	3.49	4.02	9.20	9.02
20	Calcium as Ca	mg/L	-	-	-	-	-	20	23.2	ND	23.2	24.8	31.2	33.6
21	Magnesium as Mg	mg/L	-	-	-	-	-	11.17	7.77	20.89	9.72	8.26	15.06	16.03
22	Fluoride as F	mg/L	-	-	-	-	-	0.34	0.28	0.46	0.31	0.26	0.41	0.41
23	Carbonate as CO_3	mg/L	-	-	-	-	-	12	ND	ND	ND	ND	ND	ND
24	Bicarbonate as HCO_3	mg/L	-	-	-	-	-	104	104	162	104	102	160	158
25	Sodium as Na	mg/L	-	-	-	-	-	26.2	22.91	38.29	28.10	25.72	44.08	48.84
26	Total Phosphate as PO_4	mg/L	-	-	-	-	-	ND	ND	1.22	1.22	ND	ND	0.92
27	*Total Coliform*	MPN/100ml	50	500	5000	-	-	58	41	33	49	31	39	63
28	*Fecal Coliform*	MPN/100ml	-	-	-	-	-	31	21	15	17	10	10	39
29	*E-coil*	MPN/100ml	-	-	-	-	-	6	4	2	4	2	2	6

Sl. No	Parameters	Unit	Water Quality Criteria					SW-1	SW-2	SW-3	SW-4	SW-5	SW-6	SW-7
			A	B	C	D	E							
30	Manganese as Mn	mg/L	-	-	-	-	-	0.006	ND	ND	ND	ND	ND	ND
31	Zinc as Zn	mg/L	-	-	-	-	-	0.302	0.302	0.006	ND	ND	ND	ND
32	Iron as Fe	mg/L	-	-	-	-	-	0.072	0.072	0.099	ND	ND	ND	ND
33	Mercury as Hg	mg/L	-	-	-	-	-	0.451	0.451	ND	ND	ND	ND	ND
							CLASS	**B**	**B**	**B**	**D**	**D**	**D**	**D**

Note: Lake near Ayynur village (SW-8) – no water sample was collected as the lake was dry during the visit/study period

Aldrin, Atrazine, Alachor, Dieldrin, Aplha HCH, Beta HCH, Delta HCH, 2, 4 - Dichlorophenosyacetic acid, Butachlor, Chlorpyriphos, DDT & Isomers, DDE & Isomers, DDD & Isomers, Ethion, Endosulfan, Isoproturon, Malathion, Methyl parathion, Monocrotophos, Phorate, Lindane are absent and Oil & Grease, Anionic Detergents, Phenolic Compounds, Residual Free Chlorine, Hexavalent Chromium as Cr+6, Nitrite as NO2, Silver as Ag, Lead as Pb, Arsenic as As, Cadmium as Cd, Copper as Cu, Poly Aromatic Hydrocarbon (PAH) are not detected in the collected samples.

Table 3.21 Ground water quality analysis results

Sl. No.	Parameters	Unit	Std. IS 10500:2012 (Second Rev)		GW-1	GW-2	GW-3	GW-4	GW-5	GW-6	GW-7	GW-8
			AL	PL								
1	pH	-	6.5-8.5	NR	7.76	7.84	7.98	7.52	7.84	7.80	7.94	7.56
2	Colour	Hz	5	15	<1	<1	<1	<1	<1	<1	<1	<1
3	Turbidity	NTU	1	5	0.25	1.1	0.21	0.4	0.2	0.3	0.2	0.1
4	Temperature	^{0}C	Not Specified		25.3	26.9	27.1	27.4	26.4	26.6	26.6	26.4
5	Electrical Conductivity	µS/cm	Not Specified		2554	2098	1899	1689	3124	2917	1898	2112
6	Total Dissolved Solids	mg/L	500	2000	1453	1289	1097	1132	1784	1711	1182	1315
7	Total Hardness as $CaCO_3$	mg/L	200	600	360	420	416	322	380	482	448	532
8	Alkalinity as $CaCO_3$	mg/L	200	600	380	370	412	260	590	510	420	528
9	Nitrate as NO_3	mg/L	45	NR	2.78	1.9	24.61	8.09	37.69	2.30	29.17	17.90
10	Chloride as Cl^-	mg/L	250	1000	350.27	180.02	181.98	232.86	438.55	468.11	187.24	232.58
11	Sulphate as SO_4	mg/L	200	400	186.67	150.55	92.99	133.04	184.64	151.91	128.80	90.74
12	Total Nitrogen	mg/L	Not Specified		6.9	4.49	30.14	13.2	45.59	9.29	36.49	25.60
13	Residual Sodium Carbonate	meq/L	Not Specified		ND	ND	ND	1.94	ND	ND	ND	ND
14	Ammoniacal Nitrogen	mg/L	Not more than 5		0.44	0.33	0.33	0.22	0.56	0.44	0.44	0.44
15	Potassium as K	mg/L	Not Specified		46	17.75	24.49	14.11	82.64	16.20	22.98	15.62
16	Calcium as Ca	mg/L	75	200	84	112	80	112	88	108	96	121.6
17	Magnesium as Mg	mg/L	30	100	36.45	34.02	52.48	51.03	38.88	70.47	50.54	55.40

Sl. No.	Parameters	Unit	Std. IS 10500:2012 (Second Rev)		GW-1	GW-2	GW-3	GW-4	GW-5	GW-6	GW-7	GW-8
			AL	PL								
18	Fluoride as F	mg/L	1	1.5	0.53	0.98	0.97	0.86	0.51	0.94	0.92	1.30
19	Total Kjeldhal Nitrogen	mg/L	Not Specified		1.12	1.68	1.68	1.68	1.68	1.68	1.68	1.68
20	Bicarbonate as HCO_3	mg/L	Not Specified		274	370	412	260	590	510	420	528
21	Sodium as Na	mg/L	Not Specified		372.8	104	98	240	292	278.83	110.08	98.29
22	Total Phosphate as PO_4	mg/L	Not Specified		0.51	0.29	0.43	0.35	0.43	0.24	0.37	0.32
23	Zinc as Zn	mg/L	5	15	ND	0.302	0.043	0.005	ND	ND	ND	ND
24	Iron as Fe	mg/L	1	NR	0.013	0.154	0.009	0.016	ND	ND	ND	ND
25	Manganese as Mn	mg/L	0.1	0.3	0.039	0.151	0.01	ND	ND	ND	ND	ND

Note: Total Suspended Solids, Hexavalent Chromium as Cr+6, Nitrite as NO2, Carbonate as CO3, Anionic Detergents, Silver as Ag, Lead as Pb, Arsenic as As, Cadmium as Cd, Total Chromium, Copper as Cu, Mercury as Hg are not detected and E-coli is absent in the sample collected.

3.8.4 Interpretation

3.8.4.1 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 Ayynur 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 µs/cm (SW-2) to 755 µs/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.

3.8.4.2 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 µs/cm (GW-4) to 2554 µs/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.

3.9 Hydrology & Geology

3.9.1 Scope and methodology

In any given environment the occurrence and movement of ground water along with its quality & quantity is chiefly controlled and governed by many factors such as geographical set-up, climate and rainfall conditions, hydrological features, topography, soil characteristics, the nature and thickness of underlying rock formations and other related aspects that prevail in an area. Therefore, the study envisages identifying the existing surface & ground water conditions comprising the quality and potential within the project site and its neighborhood, relating the proposed Cane Crushing unit, Multi feed distillery unit and co-gen unit identifying the likely impacts on surface and ground water regime and indicating mitigation measures. To accomplish the proposed objective of the study, the scope and methodology adopted is as follows:

- Collection of the relevant data contained in the EIA and EMP Reports, from the earlier reports and Maps of Central Ground Water Board (CGWB), Geological Survey of India (GSI), other Institutions and Departments.
- Identify Inter- related and inter–dependent key factors that play vital role in the occurrence of ground water its quality and potential.
- Identify surface water resources in the project site and its catchment area.
- Assess the ground water resource potential in the catchment area of the project site.
- Bring out various events and processes that comprise the project activity.
- Identify the site-specific environmental issues and mitigation measures and
- Compile a consolidated, comprehensive and meaningful report of the Project site and its Buffer zone (catchment area).

Initially the data & scientific information available in the Pre-feasibility Report was referred to understand the key points of Project. Published data related to the region of Project Area and Reports of Central Ground Water Board have been collected. Subsequently, field investigation was carried out for ground truth for two days on 3rd November 2024. During the survey surface rock outcrops, geological sections on the Road, Nala Cuttings and few Dug wells were observed. Inventory of wells representing the proposed project site and ten-kilometer buffer zone was considered. The chemical quality of both surface and ground water was assessed based on the 8 GW and 7 SW samples collected by the Water Pollution functional area expert. Hydrogeological data of about **15 wells (Both DW & BW)** was collected to compare and decipher the overall groundwater situation of the core and buffer zone.

Information already available and the data collected during the survey were analysed to comprehend the overall groundwater situation in the core and 10.0 Km buffer zone of the Project Site area. Certain mitigation measures have been indicated to avoid adverse effect on the Surface & Groundwater environment.

3.9.2 Field studies

Field traverses were carried out in the core and buffer zone of 10.0 Kms to observe the geology, structures, Geomorphic units, Mineralization zones, Major streams, Drainage pattern & Tanks, Canals, assessment of recharge conditions, areas of discharge & recharge, road / nala cuttings for subsurface profiles, inventory of wells and other administrative details, Infrastructure

available etc., To decipher the litho units the road, well section and nala cuttings were observed wherever possible. Field photographs were captured for documentation. The availability of source of water from the Cauvery River at the lift point was visited to ascertain the availability of water to be supplied this unit.

3.9.3 Secondary data utilized

- SOI Toposheet No's, 58 J/5, 58 J/9 on 1:50000 Scale.
- GSI Quadrangle Map Sheet 58 J on 1:250000 Scale Published in 1995.
- CGWB District Groundwater Information Booklet for Karur District, 2008.
- Aquifer Management Plan of Kulithalai Taluk, Karur District, Tamil Nadu - Central Ground Water Board, Department of Water Resources, River Development and Ganga Rejuvenation, Ministry of Jal Shakti, Government of India.

3.9.4 Primary data with interpretation

3.9.4.1 Regional Geology & Local Geology

Field traverses were carried out wherever litho units exposed and accessible to ascertain the Geology & Structure of the study area in the core and buffer zone and GPS coordinates captured to mark on the Geological Map prepared and enclosed as **Annexure-14**. Field photographs were captured and documented. Few samples were observed in hand specimen with reference to Colour, texture, grain size & disposition to identify the rock type and mapped accordingly correlating with the published Geological Quadrangle map of GSI.

The Core and Buffer Zone of the study area is a part of province of Tiruchirapalli Quadrangle exposing crystalline rocks of Archaean and Proterozoic Age, Upper Gondwana Formations, Sedimentary rocks of Mesozoic Age, Miocene and Quaternary Sediments.

The oldest group of rocks recognised is the Khondalite Group comprising Garnetiferous Sillimanite gneiss with or without graphite, Quartzite and Calc gneiss /Calc granulite and crystalline limestone. The Charnockite group of rocks comprise Charnockite and their pegmatioidal variant, Pyroxene granulite and magnetite quartzite. The Khondalite and Charnockte group of rocks occur closely associated with each other and intricately co-folded. Thin bands of amphibolite/ norite/ gabbro and enclaves of dunite / peridotite / pyroxenite, are seen in the southern and northern part of the area. The migmatite group of rocks comprising hornblende biotite gneiss, grey granite, garnet granulite, Augen gneiss and granite gneiss have formed by retrograde metamorphism of the granulite, due to tectonic activity. The migmatites cover a major part of the area and form gently undulating plains. The migmatite is also dominant along the hinge region of the folded Khondalite and Charnockite.

3.9.4.2 Stratigraphy

Rock Type	Group	Period
Alluvium (Clay, Silt and sand)	-	Quaternary
Pegmatite; Quartz Vein	Acid Intrusive	Upper Proterozoic
Hornblende - Biotite Gneiss	Peninsular Gneissic Complex	**Archaean**
Granite Gneiss	**Migmatite Complex**	

Rock Type	Group	Period
Hornblende-Biotite Gneiss/Migmatite; Grey Granite, Garnet Granulite		
Amphibolite/Norite/Gabbro	Ultramafic and Mafic Complex	
Calc Gneiss/Calc Granulite/ Crystalline Limestone	Khondalite Group	
Quartzite		

Source: GSI Quadrangle map No. 58 J, 1995.

3.9.4.3 Local Geology

The Study area and its environs is occupied with Hornblende-Biotite Gneiss / Migmatite of Migmatite Complex belonging to Archaean Age. Geology map is enclosed as **Annexure-14**. 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.

Structure: Structurally the area is undisturbed and free of any intrusions. No major faults or any structural disturbances were observed in the core and buffer zone of the project area excepting minor fissures and lineaments along the streams which are marked. These act as conduits for the movement of surface and groundwater. The movement and occurrence of groundwater is controlled by these structures (**Annexure-14)**.

3.9.4.4 Mineral resources

Karur District: The district is rich in industrial minerals, with limestone being the primary resource found in Kulithalai and Aravakurichi taluks for cement and fertilizer industries. Other notable resources include precious stones like Ruby and Sapphire, as well as graphite, vermiculite, quartz, and feldspar. The area also contains minor minerals like clay, sand, and gravel.

3.9.4.5 Geomorphology & Soils

The core and buffer zone of the project area is part of a Pediplain Shallow Weathered (PPS) and Alluvial plain (AP) (along Cauvery River, Few scattered pediments (PD) and residual hill (RH). Soil is observed to be red to dark brown of sandy loam and clay type with thickness varying between few centimetres to less than 0.25m. (**Annexure-14**).

3.9.4.6 Hydrogeology

A. Topography & Drainage

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) (**Annexure-14**). 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/km^2. All the stream coursed are ephemeral in nature except higher order stream (Cauvery River).

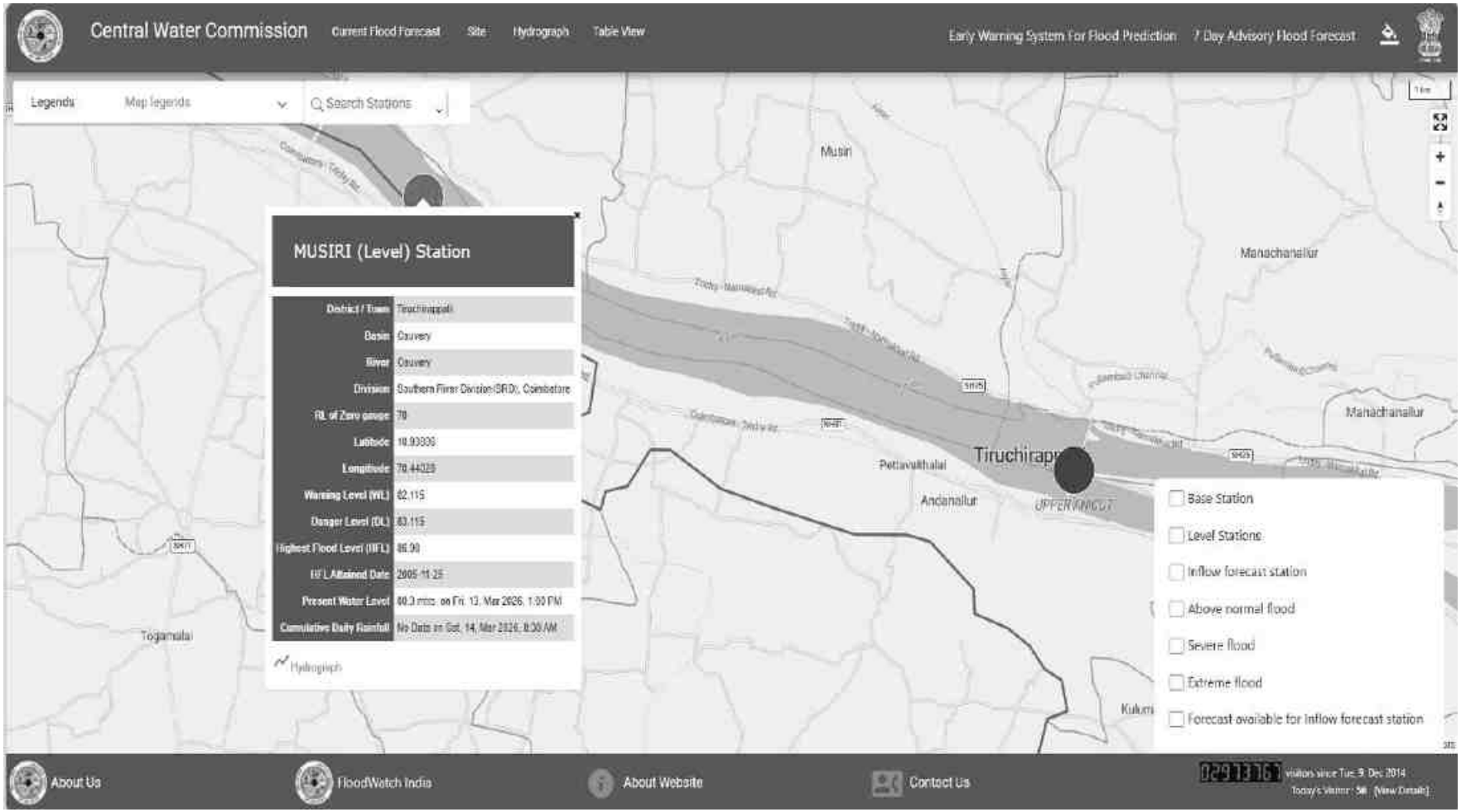


Fig 3.13 Map showing flood forecast level stations along with water level details

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.

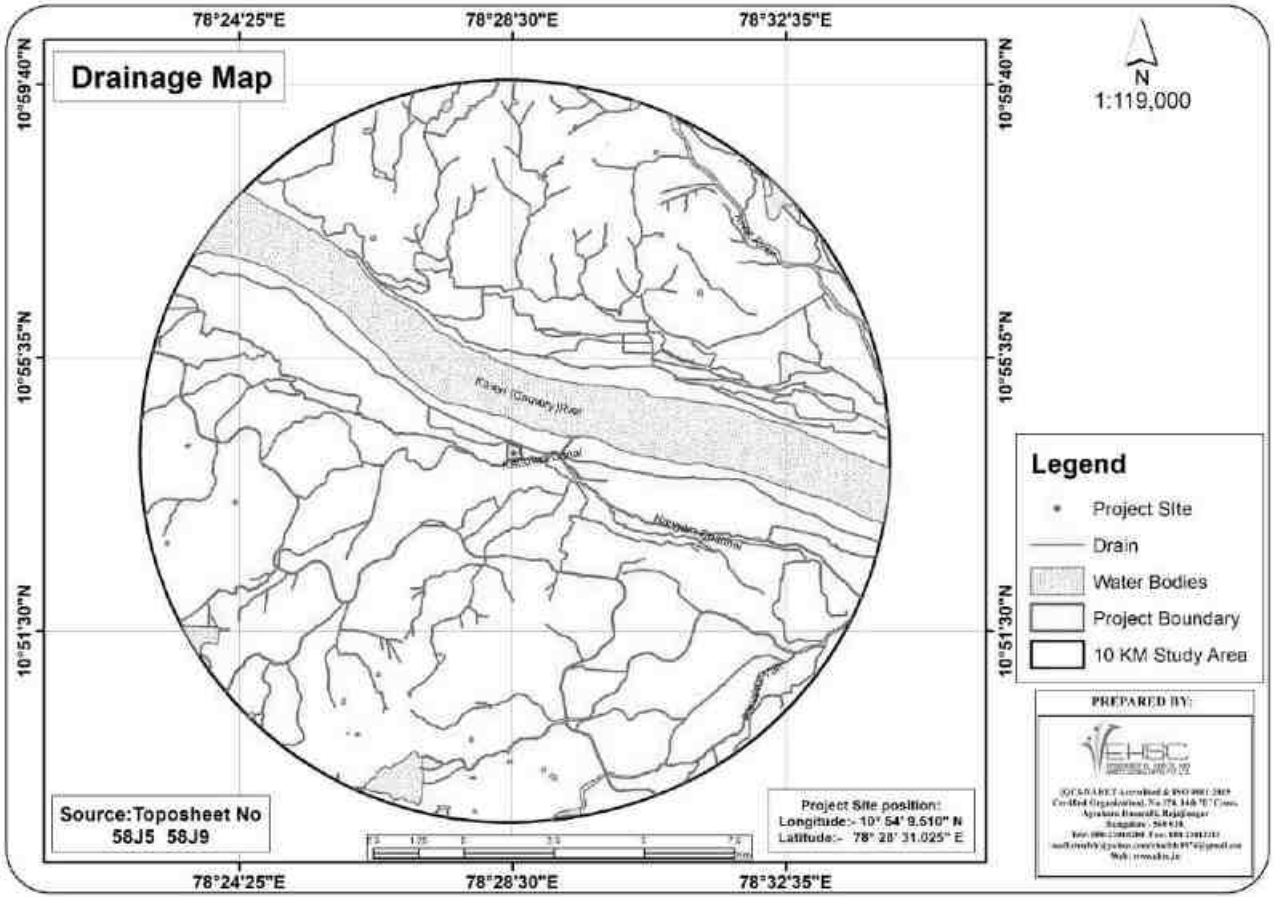


Fig 3.14 Drainage map of the study area

B. Rainfall & Climate

Kulithalai experiences semi-arid climate with extreme summers and moderate winter. The area experiences the temperature variation between 20^0C and 38^0C. The temperature begins to rise by the end of February, till the month May, which is the hottest month. Coldest months are December and January. The taluk receives an average annual rainfall of **750 mm** [9].

C. Hydrogeological Survey (Baseline Data)

Hydrogeological survey was carried out in the core and buffer zone of the proposed project area. **15 Wells** were inventoried both Dug wells and bore wells for deciphering the groundwater regime. The information on the total depth, depth to water level, weathered zone and litho units encountered along with aquifers tapped is collected for a clear understanding of the groundwater regime. Also, the water level fluctuation during pre and post monsoon seasons was recorded.

[9] CGWB District Groundwater information Booklet – April 2008

The recharge and discharge conditions were ascertained with reference to monsoon, canals and irrigation practices were also recorded wherever the well owners were present during field work.

All the wells inventoried were mostly energised bore wells and Dug wells with pumps fitted to decipher the groundwater conditions viz. Depth to water Level, Total Depth, nature and type of weathering, rock type encountered, Aquifer, Yields and their behaviour during lean season, recharge conditions etc. were recorded as reported by the owners mostly and local enquiry during non-presence of owners.

Table 3.22 List of wells inventoried

No.	Village Name	Type of well	DTWL/TD(m)	Geo coordinates	
				Latitude	Longitude
WI-1	Ariyampatti	DW	3/12	10° 53' 48.85" N	78° 28' 12.16" E
WI-2	Nadupatti	DW	2.8/10	10° 53' 00.65" N	78° 27' 42.91" E
WI-3	Tiaruchapur	DW	3.5/14	10° 52' 58.51" N	78° 29' 46.34" E
WI-4	Padukkottai	DW	3/12	10° 53' 38.51" N	78° 30' 29.85" E
WI-5	Nangavaram	DW	5/16	10° 51' 59.52" N	78° 32' 27.25" E
WI-6	Parali	DW	5.5/14	10° 54' 44.61" N	78° 25' 45.06" E
WI-7	Kulittalai	BW	9/90	10° 56' 34.63" N	78° 24' 44.99" E
WI-8	Marudur (Near Subrahmanya Swamy Temple)	BW	12/85	10° 54' 08.35" N	78° 27' 50.25" E
WI-9	Pettavaithalai	BW	10/75	10° 53' 59.05" N	78° 29' 12.25" E
WI-10	Melariyampatti (shri Bhagavathi Amman Temple)	BW	9/68	10° 53' 48.11" N	78° 28' 11.60" E
WI-11	Pettavaithalai (Govt. High School)	BW	8/70	10° 53' 25.53" N	78° 28' 49.74" E
WI-12	Musiri	BW	12/80	10° 57' 10.42" N	78° 26' 35.08" E
WI-13	Neyveli	DW	8/15	10° 56' 06.35" N	78° 29' 14.75" E
WI-14	Kalingappati	DW	9/14	10° 49' 53.41" N	78° 27' 26.76" E
WI-15	Ayynur	BW	12/75	10° 52' 03.75" N	78° 23' 25.30" E

D. Occurrence of Groundwater (Aquifer)

Karur district is underlain entirely by Archaean Crystalline formations with Recent alluvial deposits occurring along the river and streams courses. Weathered, fissured and fractured crystalline rocks and the recent alluvial deposits constitute the important aquifer systems in the district.

The porous formations in the district are represented by river alluvium. These alluvial deposits are confined to the Major River and stream courses only. Ground water occurs under phreatic conditions. The maximum saturated thickness of these aquifers is up to 10 m depending upon the topographic conditions.

The hard consolidated crystalline rocks of Archaean age represent weathered, fissured and fractured formations of gneisses, granites, Charnockite and other associated rocks. Ground water occurs under phreatic conditions in the weathered mantle and under semi-confined conditions in the fractured zones. The thickness of the weathered mantle of the hard rocks is varying from less than a meter to as much as 20.00 m. It is within the depth of 15.0 m in major part of the district.

Dug wells form most of the abstraction structures while borewells are minimum to tap the groundwater. Dug-cum-borewells are also quite common to prolong the sustenance during lean months.

E. Depth to Water Level

The depth to water level in the study area was recorded as observed and reported during the field study. The depth to water level varied between 5.5 m to 15.0 m in dug wells and bore wells. The annual water level fluctuation is reported to be varying between 1.0 to 3.0 m in the study area. The depth range of bore wells are 60.0 m to 100.0 m and dug wells is 10.0 - 20.0 m.

The flow direction follows the general topography of the area. The general flow direction of groundwater in the study area is towards north and east.

F. Long term Water Level Trend

The water level fluctuation i.e., the difference in water level between the two specified periods represent the change in groundwater storage. A decline or fall in water level represents groundwater abstraction more than increment, while a rise represents ground water increment more than abstraction. The long-term water level fluctuation for the period 1997-2007 indicates rise in water level in the area 0.00222 - 0.5556 m/year and the fall in water level ranging between 0.0202 - 0.2748 m.year [10].

3.9.4.7 Groundwater Resources

The resource estimation and categorization to be carried out as per the recommendations of Groundwater Estimation Methodology-97 (GEM-97) considering watershed as a unit. Watershed and administrative boundaries do not match with the administrative boundaries. However, average stage of development is categorized as Safe at stage of Development 33% in the Kulithalai Taluk[11].

The total water requirement for the proposed Project during operational phase, Utilities and Green Belt is estimated to be around 3,700 KLD (2,500 KLD fresh water and 1,200 KLD recycled water). The source of water is from Cauvery River. The Management have applied for permission to the Water Resources Department, Govt. of Tamil Nadu.

3.9.4.8 Recharge conditions

The recharge conditions are observed to be moderate and most of the study area is over Pediplain which is a runoff zone. The recharge is being discharged to River Cauvery as evidenced by the dry tanks and ephemeral streams observed in the core and buffer zones. The Tamil Nadu Govt. have contemplated a very good canal network to cater to the needs of the agriculture covering the entire buffer zone.

[10] CGWB District Groundwater information Booklet – April 2008
[11] CGWB- National Aquifer Mapping and Management: Lower Cauvery Aquifer System, Tamil Nadu, December 2019

3.9.4.9 Seismic Tectonics

The seismic zoning map has been referred to know the zone in which the project site is falling. The proposed project site is falling on Zone-III which has very Moderate risk of damage. Source: NDMA, GOI.

3.10 Biological Environment

3.10.1 Sensitivity/ habitats of the study area

Table 3.23 Sensitivity of the study area

Sl No.	Sensitive Ecological features	Name of feature/ Location	Distance (Km) & Direction	Reason of Significance
1	Ramsar Wetland (Ramsar convention)	No	-	-
2	Wetlands as per National Wetlands Atlas	No	-	-
3	National Park	No	-	No such Notified areas
4	Wildlife Sanctuary	No	-	No such Notified areas
5	Eco-Sensitive Zones	No	-	No such Notified areas
6	Eco-Sensitive Areas	No	-	No such Notified areas
7	Tiger Reserve / Corridor	No	-	No such Notified areas
8	Biosphere Reserve	No	-	No such Notified areas
9	Elephant Reserve	No	-	No such Notified areas
10	Important Bird areas(IBAs)	No	-	No such Notified areas
11	Reserved Forests	Marudur RF	320 m (N)	As per the Van (Sanrakshan Evam Samvardhan) Adhiniyam Act, 1980
		Kulithalai RF	2.29 km (NW)	
		Manatattai RF	8.20 km (NW)	
12	Coastal Zones	No	-	No such Notified areas
13	Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, over wintering, migration	No	-	No such Notified areas
14	Name of the Forest Divison	Karur	-	-

Note: RF- Reserve Forest

Table 3.24 Rivers and water bodies

Sl No.	Feature	Name of the feature	Direction & Distance	
1	River	Cauvery River	0.60 km	N
2	Reservoir	-	-	-
3	Lakes	-	-	-
4	Nala	2 Nos. one within project site & other adjacent to the project site	0	S & E
5	Irrigation Canal	Vadivu Canal	0.4 km	S
		Canal	0.3 km	N
		Nangam Channel	2.5 km	SE
		New Kattalai High Level Canal	2.7 km	S

3.10.2 Methodology

For selection of sampling location, the study area has been divided into 4 quartiles so that the sampling locations are evenly distributed throughout the study area.

Study area	10 Km
Core zone	0-2 Km
Buffer zone	2-10 Km
Criteria for selection of sampling locations	AP, AQ - Wind rose of the study area LU- Land use and topography of the study area
Estimation of Phyto-Sociological Parameters	Girth at Breast Height (GBH), Basal Area, Density, Frequency, Relative Density, Relative Frequency, Relative Dominance
Diversity Indices	Importance Value Index (IVI), Shannon - Wiener index
Carbon Sinking Potential	Volume of tree, Wood density, Above Ground Biomass (AGB), Below Ground Biomass (BGB), Total Biomass (TB), amount of Carbon and Carbon di-oxide
Referencing for Species recorded during other seasons	Forest Working Plan of Karur Forest Division, Karnataka 2021-2031, Discussion with Local people, websites like iNaturalist, eBird etc.,
Secondary data	Discussion with Local people.
Data Validation references	➢ Field Guides like Book of Indian Birds (Salim Ali, 1983 & 2012), Butterflies of India (Singh, 2011), Reptiles of India (Daniel, 2002), Handbook on Weed Identification (Dr. Naidu, 2012) ➢ Through websites like Botanical Survey of India, Zoological Survey of India, IUCN Red Data Book, Wildlife Schedules from Wildlife (Protection) act, 1972,), ENVIS, FRLHT. ➢ Consultation with local people and respective Forest Division.

3.10.3 Primary Data

Table 3.25 Primary data collection

Sl No.	Habitat	Method	Size of the quadrate / Transect (m)	Number	Time and duration of sampling
Project Site					
1.	Trees	Total Enumeration	-	-	05.11.2024 & 06.11.2024
2.	Shrubs	Quadrant	10 x 10	1	
3.	Herbs and Grass	Quadrant	5 x 5	1	
4.	Fauna	Transect Method	1000	1	
5.	Butterflies	Transect Method	1000	1	
6.	Avi-Fauna	Point Count Method	-	-	
Study area					
1.	Trees	Quadrant	100x100 and 50x50*	6	05.11.2024 & 06.11.2024
2.	Shrubs	Quadrant	10x10	8	
3.	Herbs and Grass	Quadrant	5 x 5	8	
4.	Fauna	Transect Method	1000	8	
5.	Butterflies	Transect Method	1000	8	
6.	Avi-Fauna	Point Count Method	-	8	

Note: *50X50 m in Reserve Forests and 100X100m in Agricultural lands for tree data collection in Study area.

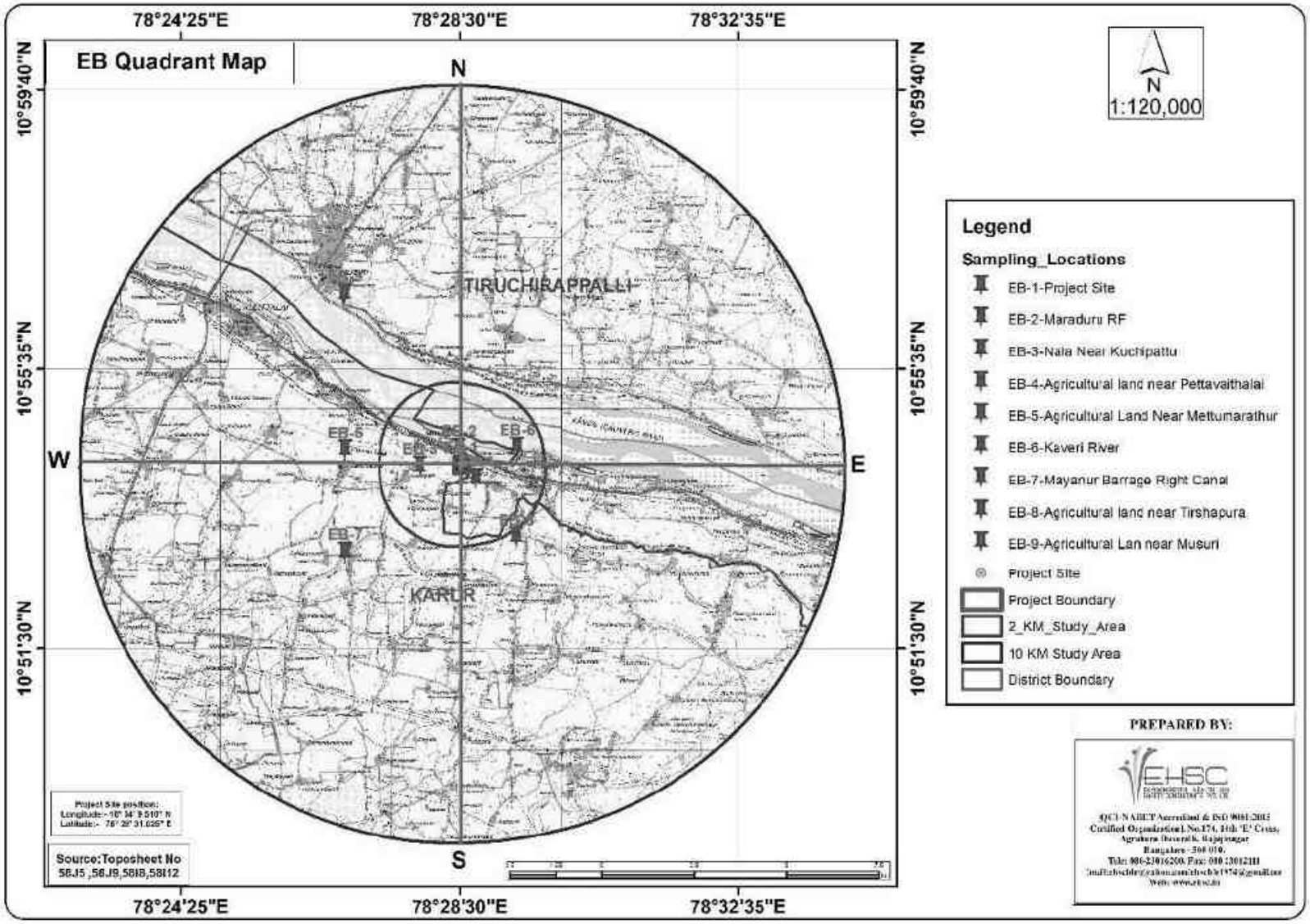


Fig 3.15 Map showing EB Inventory and Sampling Locations in 10 Km Radius

Table 3.26 Details of Sampling Locations

Sl. No	Sampling location	Geographical co-ordinates	Criteria			Distance (Km)	Date of Sampling
			Quartile	Wind rose	Land use		
1	Project Site	10°54'9.68"N 78°28'31.30"E	Impact area				05.11.2024
Core Impact Zone (0-2 Km Radius)							
2	Maraduru RF	10°54'24.39"N 78°28'30.79"E	NE	UW	Reserve Forest	0.22	06.11.2024
3	Nala Near Kuchipattu	10°54'9.47"N 78°27'54.43"E	SW	DW	Water body	0.56	06.11.2024
4	Kaveri River	10°54'25.42"N 78°29'21.15"E	NE	UW	Water body	1.39	06.11.2024
5	Agricultural land near Pettavaithalai	10°53'57.73"N 78°28'44.70"E	SE	DW	Agricultural land	0.31	06.11.2024
Buffer Zone (2-10 Km Radius)							
6	Agricultural land near Tirshapura	10°53'6.18"N 78°29'19.28"E	SE	DW	Agricultural land	2.19	05.11.2024
7	Agricultural Land Near Mettumarathur	10°54'24.01"N 78°26'50.97"E	NW	UW	Agricultural land	2.94	05.11.2024
8	Mayanur Barrage Right Canal	10°52'52.94"N 78°26'49.93"E	SW	DW	Water body	3.61	05.11.2024
9	Agricultural Lan near Musuri	10°56'29.69"N 78°26'48.88"E	NW	UW	Agricultural land	5.07	06.11.2024

3.10.4 Results & Discussion

3.10.4.1 Floral composition in Project site and Study area-Trees

Composition	Project site	Study area
Trees		
Tree Composition	• 4 Species (n=127) belonging to 3 families were recorded. • No Trees will be removed for the proposed project. • Dominant: *Cocos nucifera* (n=108)	• 18 Species (n=327) belonging to 7 families were recorded. • Dominant: *Cocos nucifera*. (n=163)
RET status	No RET Species recorded	No RET Species recorded

<table>
<tr><th>Composition</th><th>Project site</th><th>Study area</th></tr>
<tr><td>Girth Class Distribution</td><td>
<table>
<tr><th>Sl No.</th><th>Girth Class (Cm)</th><th>No. Observed</th><th>Percentage</th></tr>
<tr><td>1</td><td>31-60</td><td>65</td><td>51.181</td></tr>
<tr><td>2</td><td>61-90</td><td>57</td><td>44.882</td></tr>
<tr><td>3</td><td>91-120</td><td>3</td><td>2.362</td></tr>
<tr><td>4</td><td>121-150</td><td>0</td><td>0</td></tr>
<tr><td>5</td><td>Above 150</td><td>2</td><td>1.575</td></tr>
<tr><td colspan="2">Total</td><td>127</td><td>100</td></tr>
</table>
</td><td>
<table>
<tr><th>Sl No.</th><th>Girth Class (cm)</th><th>No. recorded</th><th>Percentage</th></tr>
<tr><td>1</td><td>31-60</td><td>120</td><td>36.697</td></tr>
<tr><td>2</td><td>61-90</td><td>183</td><td>55.963</td></tr>
<tr><td>3</td><td>91-120</td><td>21</td><td>6.422</td></tr>
<tr><td>4</td><td>121-150</td><td>2</td><td>0.612</td></tr>
<tr><td>5</td><td>above 150</td><td>1</td><td>0.306</td></tr>
<tr><td colspan="2">Total</td><td>327</td><td>100</td></tr>
</table>
</td></tr>
<tr><td>Basal area</td><td>Total Basal area- 0.346m^2/ha
• Maximum Basal area – Cocos nucifera (0.254m^2/ha).
• Minimum Basal area- Azadirachta indica & Borasus flabellifer (0.0008 m^2/ha).</td><td>Total Basal area- 2.252m^2/ha
• Maximum Basal area - Cocos nucifera (1.299m^2/ha)
• Minimum Basal area- Ceiba pentandra & Tectona grandis (0.004 m^2/ha) each.</td></tr>
<tr><td>Carbon Sequestration capacity of trees</td><td>• Total Carbon sequestration Capacity- 31.840 tonnes
• Major Carbon Sequester– Cocos nucifera (23.739tonnes).</td><td>• Total Carbon sequestration Capacity – 104.187tonnes.
• Major Carbon Sequester- Cocos nucifera (63.678tonnes)</td></tr>
<tr><td colspan="3">Biological Indices</td></tr>
<tr><td>Important Value Index</td><td>--</td><td>Cocos nucifera (IVI-123.652)</td></tr>
<tr><td>Shannon-Weiner diversity</td><td>--</td><td>1.50</td></tr>
<tr><td>Keystone species</td><td>-</td><td>Ficus racemosa, Ficus bengalensis & Ficus religiosa</td></tr>
<tr><td>Secondary data of Study area</td><td></td><td>Delonix regia, Albizia amara, Spathodea campanulata, Morinda citrifolia, Cassia fistula, Conocarpus erectus, Pithecellobium dulce, Moringa oleifera, Alstonia scholaris, Syzygium cumini, Kigelia Africana, Mimusops elengi, Wrightia tinctoria, Morinda coreia, Chloroxylon swietenia, Gyrocarpus americanus</td></tr>
</table>

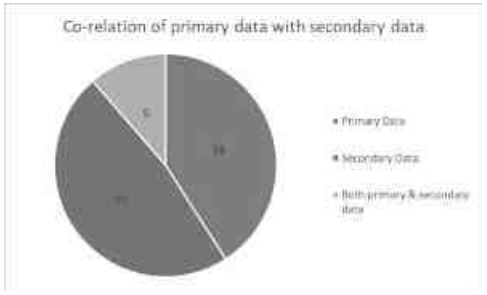
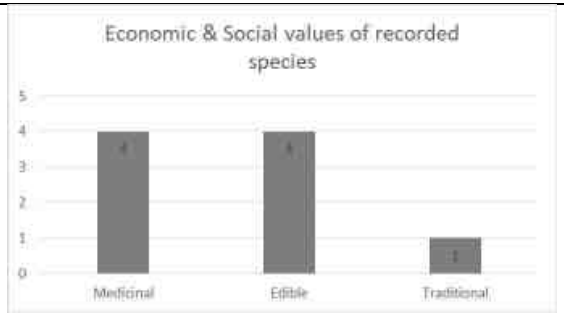
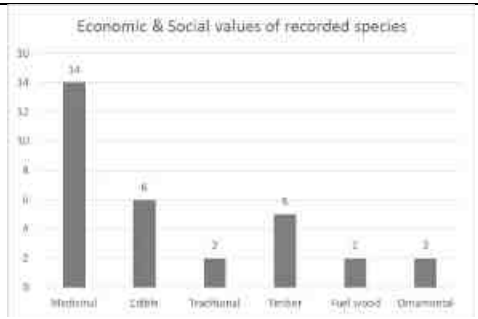
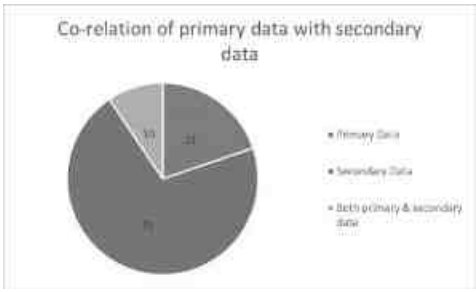
<table>
<tr><th>Composition</th><th>Project site</th><th>Study area</th></tr>
<tr><td></td><td></td><td>(Source:- iNaturalist- Plants(Trees) of Karur, Tamilnadu)</td></tr>
<tr><td>Data Validation and comparison of primary data with secondary data</td><td>
<table>
<tr><td>Primary Data:-</td><td>18 Species</td></tr>
<tr><td>Secondary Data:-</td><td>21 species</td></tr>
<tr><td>Both primary & secondary data:-</td><td>5 species</td></tr>
</table>
</td><td> 
</td></tr>
<tr><td>Economic Importance</td><td> 
</td><td> 
</td></tr>
</table>

Table 3.27 Checklist of Trees recoded at project site

Sl. No	Scientific Name	Local name	No. recorded
1	*Azadirachta indica* A.Juss.	Akaluti	6
2	*Borasus flabellifer* L.	Panai	8
3	*Cocos nucifera* L.	Cekaracam	108
4	*Samanea saman* (Jacq.) Merr.	Thoongu moonji Maram	5
		Total	**127**

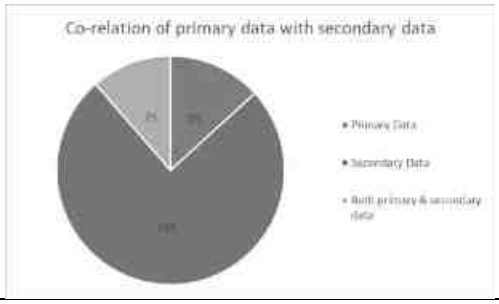
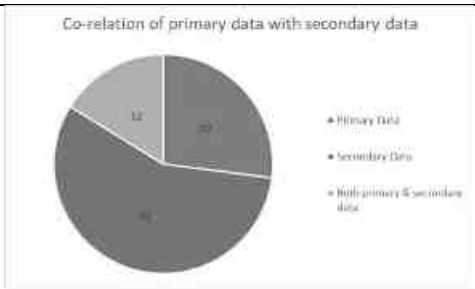
3.10.4.2 Floral composition in Project site and Study area-Herbs & Shrubs

<table>
<tr><th>Composition</th><th>Project site</th><th>Study area</th></tr>
<tr><td>Herbs, Shrubs and Climber Composition</td><td>• 6 species of herbs belonging to 5 families
• 5 species of shrubs belonging to 5 families.
• 1 climber species</td><td>• 11 species of herbs belonging to 9 families,
• 10 species of shrubs belonging to 6 families and
• 1 climber species</td></tr>
<tr><td>Secondary data of Study area</td><td></td><td>Neltuma juliflora, Calotropis gigantean, Opuntia stricta, Datura innoxia, Cleome viscosa, Jatropha gossypiifolia, Ipomoea carnea, Aerva javanica, Flueggea leucopyrus, Portulaca oleracea, Evolvulus alsinoides, Pedalium murex, Cascabela thevetia, Heliotropium indicum, Gloriosa superba, Vitex negundo, Sida cordifolia, Tephrosia purpurea, Martynia annua, Leucas aspera, Senna auriculata, Pergularia daemia, Nerium oleander, Catharanthus roseus, Tecoma stans, Euphorbia milii, Sansevieria trifasciata, Dodonaea viscosa, Caesalpinia pulcherrima, Euphorbia hirta, Parkinsonia aculeate, Leonotis nepetifolia, Cardiospermum halicacabum, Clitoria ternatea, Passiflora vesicaria, Senna alata, Waltheria indica, Kalanchoe pinnata, Gomphrena globosa, Coccinia grandis, Manihot esculenta, Plumeria pudica, Cucumis melo, Tagetes patula, Boerhavia erecta, Euphorbia lacteal, Herissantia crispa, Premna serratifolia, Melochia corchorifolia, Andrographis paniculata, Ouret lanata, Euphorbia antiquorum, Trichodesma indicum, Cissus quadrangularis, Xenostegia tridentate, Anisomeles indica, Cucumis maderaspatanus, Hemidesmus indicus, Indigofera tinctoria, Sida cordata, Oxystelma esculentum, Euploca ovalifolia, Actiniopteris radiate, Tarenna asiatica, Abutilon hirtum (Source:- iNaturalist- Plants(Herbs & Shrubs) of Karur, Tamilnadu)</td></tr>
<tr><td>Data Validation and comparison of primary data with secondary data</td><td colspan="2"><table><tr><td>Primary Data:-</td><td>21 Species</td></tr><tr><td>Secondary Data:-</td><td>75 species</td></tr><tr><td>Both primary & secondary data:-</td><td>10 species</td></tr></table> 
</td></tr>
</table>

3.10.4.3 Faunal composition in Project site and Study area

	Project site	Study area
A. Avifauna		
Composition	• 16 species (n=73) belonging to 14 families. • Dominant species: Rose ringed parakeet (n=15).	• 25 species (n=226) belonging to 18 families. • Dominant species: Little cormorant (n=98).
Wildlife (Protection) Act,1972 status[12]	No Schedule-I species were recorded Schedule-II Species-15 Species	No Schedule-I species were recorded Schedule-II Species-23 Species
Migratory Status	• Resident Migratory- 1 species • Resident-14 species.	• Migratory-1 species (Wood Sandpiper) • Resident Migratory- 8 species. • Resident-28 species
Seasonal/ Migratory Birds	--	Wood Sandpiper
Nocturnal/diurnal species	Diurnal - 15 Species. Red Wattled Lapwing also active during the night time	Diurnal- 25 species Red Wattled Lapwing also active during the night time
Keystone species	No notified keystone species were recorded.	No notified keystone species were recorded.
Secondary data of study area/ Other season species	Indian Peafowl, Gray Francolin, Rock Pigeon, Eurasian Collared-Dove, Spotted Dove, Blue-faced Malkoha, Asian Palm Swift, Black-winged Kite, Oriental Honey-buzzard, Booted Eagle, Shikra, Common Hoopoe, Asian Green Bee-eater, Blue-tailed Bee-eater, Indian Roller, Black-rumped Flameback, Ashy Woodswallow, Common Woodshrike, Common Iora, Bay-backed Shrike, Rufous Treepie, Large-billed Crow, Ashy-crowned Sparrow-Lark, Jerdon's Bushlark, Common Tailorbird, Blyth's Reed Warbler, Red-vented Bulbul, Lesser White throat, Large Gray Babbler, Yellow-billed Babbler, Indian Robin, Purple-rumped Sunbird, Purple Sunbird, Indian Silverbill, Black-headed Cuckooshrike, Pied Cuckoo, Little Grebe, Painted Stork, Oriental Darter, Indian Cormorant, Great EgretPurple Heron, Brahminy Kite, Common Kingfisher, Pied Kingfisher, Booted Warbler, White-browed Bulbul, White-browed Wagtail, House Sparrow, Indian Thick-knee, Spotted Owlet, Indian Spot-billed Duck, Eurasian Moorhen, Green Sandpiper, Indian Golden Oriole, Sykes's Warbler, Small Minivet, Zitting Cisticola, Brown Shrike, Eurasian Kestrel, Chestnut-bellied Sandgrouse, Yellow-wattled Lapwing, Long-tailed Shrike, Loten's Sunbird, Scaly-breasted Munia, Rosy Starling, Black Kite, Gray-headed Swamphen, Black-crowned Night Heron, Tricolored Munia, Brahminy Starling, Pale-billed Flowerpecker, Glossy Ibis, White-eyed Buzzard, Common Greenshank, Stork-billed Kingfisher, Eastern Red-rumped Swallow, Little Heron, Jungle Prinia, Indian Spotted Eagle, Indian Paradise-Flycatcher, Tree Pipit, Yellow Bittern, Plain Prinia, Siberian Stonechat, Blyth's Pipit, White-breasted Waterhen, Black-winged Stilt, Whiskered Tern, Western Marsh Harrier, Baya Weaver, Indian Nightjar, Indian Scops-Owl, Little Swift, Great Cormorant, Spot-billed Pelican, Osprey, River Tern, White-rumped Munia, Eurasian Coot, Oriental Magpie-Robin, Knob-billed Duck, Coppersmith Barbet, Short-toed Snake-Eagle, Red-necked Falcon,	

[12] Wildlife (Protection) Amendment Act,2022 Published by Gazette of India dated on 19.12.2022 (Schedule-II Part B-Birds)

<table>
<tr><th></th><th>Project site</th><th>Study area</th></tr>
<tr><td></td><td colspan="2">Ruddy-breasted Crake, Black Bittern, Yellow-throated Sparrow, Lesser Whistling-Duck, Greenish Warbler, Asian Woolly-necked Stork, Gray Wagtail, Ashy Drongo, Cotton Pygmy-Goose, Little Stint, Eastern Barn Owl, Eurasian Spoonbill, Caspian Tern, Garganey, Pheasant-tailed Jacana, Chestnut-tailed Starling, Marsh Sandpiper, Small Pratincole, Alpine Swift, Rufous-tailed Lark, Jerdon's Leafbird, Great Thick-knee, Temminck's Stint, Common Cuckoo, Richard's Pipit, White Wagtail, Greater Painted-Snipe, Bonelli's Eagle, Red Collared-DoveNorthern Pintail, Jungle Bush-Quail, Egyptian Vulture, White-rumped Vulture, Asian Tit, Rock Eagle-Owl. (Source:- eBird- Checklist of birds of Karur District, Tamilnadu)</td></tr>
<tr><td>Data Validation and comparison of primary data with secondary data</td><td colspan="2"><table><tr><td>Primary Data:-</td><td>29 Species</td></tr><tr><td>Secondary Data:-</td><td>165 species</td></tr><tr><td>Both primary & secondary data:-</td><td>25 species</td></tr></table> 
</td></tr>
<tr><td colspan="3">B. Butterfly Composition</td></tr>
<tr><td>Composition</td><td>• 14 species (n=47) belonging to 4 families.
• Dominant species: Mottled Emigrant (n=14).</td><td>• 17 species (n=122) belonging to 4 families
• Dominant species: Lemon pansy (n=8).</td></tr>
<tr><td>Wildlife (Protection) Act,1972 status[13]</td><td>No schedule- I species was recorded.
Schedule-II- Crimson Rose</td><td>No schedule- I species was recorded.
Schedule-II- Crimson Rose</td></tr>
<tr><td>Secondary data of study area/ Other season species</td><td colspan="2">Danaid Eggfly, Peacock Pansy, Blue Tiger, Common Mormon Swallowtail, Lemon Migrant, Lime Swallowtail, Dark Grass Blue, Western Golden Dartlet, Pea Blue, Chocolate Pansy, Common Sailer, Great Mormon, Tiny Grass Blue, Common Cerulean, Common Leopard, Common Rose Swallowtail, Yellow Pansy, Zebra Blue, Tailless Lineblue, Grass Demon, Dark Blue Tiger, Yellow Orange Tip, Sandalwood Defoliator, Common Silverline, Jewelled Grass-Blue, Black Rajah, Common Three-Ring, Bright Babul Blue, Striped Pierrot, Little Orange-Tip (Source:- iNaturalist- Insects (Butterflies) of Karur, Tamilnadu)</td></tr>
<tr><td>Data Validation and comparison of primary data with secondary data</td><td colspan="2"><table><tr><td>Primary Data:-</td><td>20 Species</td></tr><tr><td>Secondary Data:-</td><td>42 species</td></tr><tr><td>Both primary & secondary data:-</td><td>12 species</td></tr></table> 
</td></tr>
<tr><td colspan="3">C. Reptile Composition</td></tr>
<tr><td colspan="3">No reptile species were recorded during the studies</td></tr>
</table>

[13] Wildlife (Protection) Amendment Act, 2022 Published by The Gazette of India dated on 19.12.2022 (Schedule-II Part-H: Butterflies)

	Project site	Study area
Secondary data of study area/ Other season species	Indian Chameleon, Reticulate Leaf-toed Gecko, Oriental Garden Lizard, Brahminy Blind snake, Bengal Monitor, Rock Dragon, Bark Gecko, Streaked Kukri Snake, Pondicherry Fan-throated Lizard, Russell's Viper(Source:- iNaturalist- Reptiles of Karur, Tamilnadu)	
D. Mammal Composition		
No reptile species were recorded during the studies		
Secondary data of study area/ Other season species	Three-striped Palm Squirrel, Bonnet Macaque, Grey Slender Loris and European rabbit (Source:- iNaturalist- Mammals of Karur, Tamilnadu)	

3.10.5 Interpretation

- The proposed Project falls under the Deccan Interior Region.[14]
- 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
- No Tree removal will be carried for the proposed project and As per the RET Status, No RET species were recorded during the studies
- Carbon sequestration capacity in project site is 31.84 tonnes
- 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.

Table 3.28 Zone of Influence of impacts

Zone	Predominant Land use	No. of Sampling Locations	Biological Indices		Zone of Influence
				Flora	
Project site	Existing industry	-	-	-	The tree removal will not be carried out for the proposed project.
Study area (10 Km Radius)	Forest ecosystem.	8	Important Value Index	Largest IVI (123.652) was found in *Cocos nucifera*	The zone of influence of impacts is significant in these areas due to close proximity to the project activities to surrounding reserve forests.
			Shannon Wiener-index	1.50- richness in habitat diversity	

[14] The important agro-climatic zones in India

3.11 Socio-economic studies

3.11.1 Methodology

The socio-economic assessment was carried out using a mixed-methods approach, integrating both primary and secondary data sources to ensure comprehensiveness, reliability, and contextual accuracy.

3.11.2 Secondary Data

Secondary data were obtained from authentic and government-recognized sources, including the Census of India (2011), the District Handbook of Statistics for Thiruchirappalli and Karur Districts, and published records from relevant line departments such as Agriculture, Health, and Education.

These sources provided baseline information for analyzing key socio-economic indicators, including:

- Settlement pattern and spatial distribution
- Demographic characteristics (population size, growth trends, sex ratio, etc.)
- Social composition, including Scheduled Castes (SC) and Scheduled Tribes (ST)
- Literacy levels and educational profile
- Infrastructure facilities and basic amenities
- Workforce participation rate and occupational structure

The secondary data formed the basis for establishing the regional socio-economic profile of the study area.

3.11.3 Primary data collection

A micro-level socio-economic assessment was undertaken within a 10 km radius of the industry. Intensive primary surveys were focused on villages located within the 0–5 km radius, considering their higher potential for project influence.

Out of the total 54 villages falling within the 10 km study area, 8 representative villages were selected for detailed field investigation. The selection was based on spatial distribution, population size, and proximity to the project site to ensure adequate representation. Field surveys were conducted on 25th and 26th October 2024. Primary data were collected using the following methods:

- Focus Group Discussions (FGDs) with community members
- Random household surveys to ensure representative sampling

Respondents included household heads and other adult members residing within the study area. The mixed survey approach enabled the capture of both quantitative socio-economic data and qualitative insights regarding community perceptions, livelihood conditions, and local concerns.

3.11.4 Validation of secondary data

Demographic data and village-level information were cross-verified with the respective Gram Panchayaths to ensure consistency and authenticity. It was observed that the Gram Panchayaths

primarily rely on Census of India (2011) data for demographic records; therefore, Census data was adopted as the validated baseline for demographic analysis.

3.11.4.1 Salient features

Nearest Villages	▪ Pettavathalai - 0.66 Km, South East ▪ Kumaramangalam - 0.63 Km South West
Nearest Highway	▪ Nagapattinam - Coimbatore - Gundlupet Highway (0.12 Km)
Nearest Railway Station	▪ Marudur- 2.74 Km
Nearest Socially Sensitive receptors	▪ Sri Maaruthi Temple - 0.91 Km Pettavathalai ▪ Sri Karupanna Swamy Temple- 0.46 Km Kumaramangalam
Nearest Health Care Centre	▪ Taluk Level Government Hospital- 1.80 Km Pettavathalai Town
Nearest Airport	▪ Thiruchirappalli TRZ - 28 km

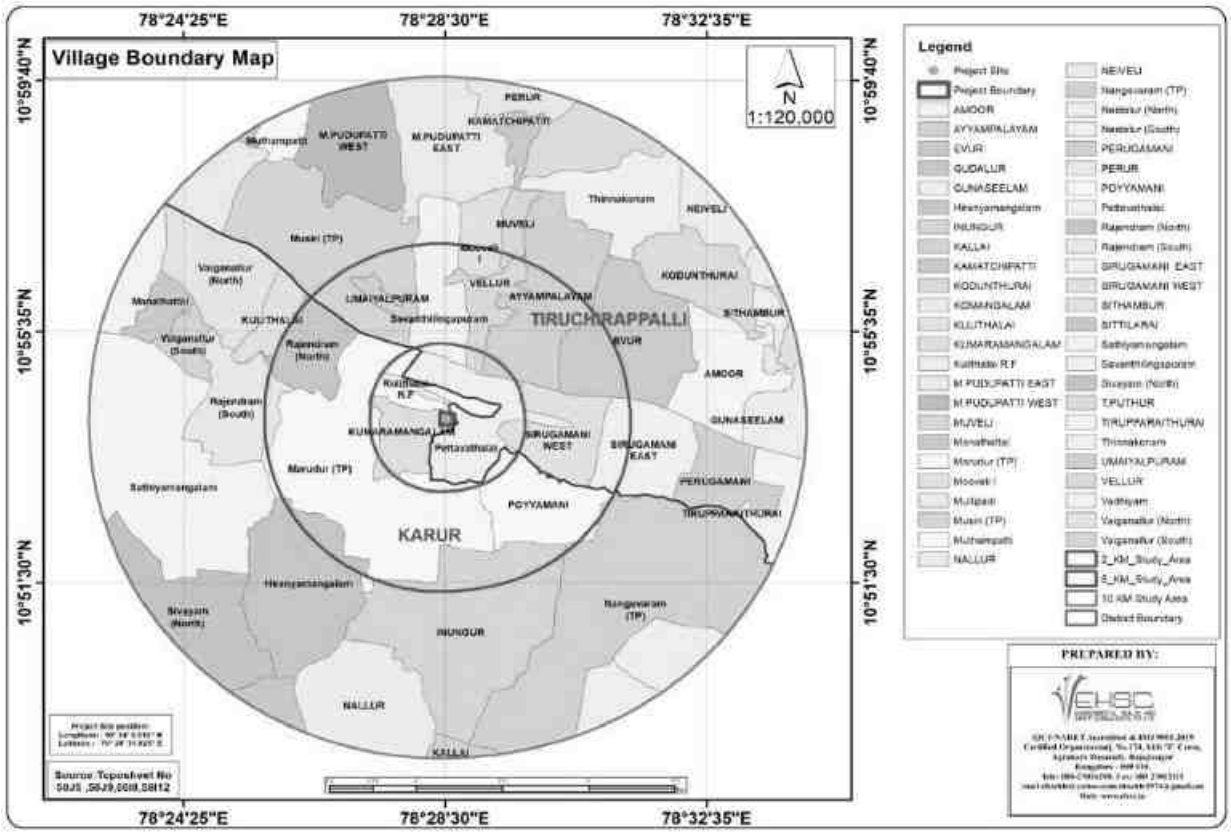


Fig 3.16 Map showing villages in 0-2, 2-5 and 5-10 Km radius

3.11.4.2 Households and population characteristics of study area villages

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.

3.11.4.3 Sex ratio

The sex ratio is an important developmental indicator, as it reflects the status of women in society. A higher sex ratio generally indicates better gender equality, while a lower ratio suggests an imbalance. In the sampled villages, the average adult sex ratio is 996, which is higher than the Tamilnadu state average of 943. Among the villages, Kumaramangalam has the highest adult sex ratio at 1001, while Sirugamani has the lowest at 996. Overall, the sex ratio varies significantly across the different villages.

3.11.4.4 Work Participation and Occupational Status of Study Area Villages

As per the Census of India, all persons engaged in 'work' defined as participation in any economically productive activity with or without compensation, wages or profit are workers. The Census classifies Total Workers into two groups namely, (i) Main workers and (ii) Marginal workers. Main Workers are those who had worked for the major part of the reference period i.e. 6 months or more. Marginal Workers are those who had not worked for the major part of the reference period i.e. less than 6 months. The working populations of study area villages are shown below.

In the study area villages, the average work participation rate is 52.26%, comprising 58.18% male workers and 41.82% female workers. However, the participation rate varies considerably among villages. Kamatchipatti records the highest work participation rate at 62.10%, with 51.68% male and 48.32% female participation, indicating a relatively balanced gender distribution. In contrast, Sirugamani (TP) shows the lowest participation rate at 41.29%, with 69.36% male and only 30.64% female participation, highlighting a marked gender disparity in workforce engagement. The detailed distribution of the working population across the study area villages is presented below.

3.11.4.5 Industry Profile of Tiruchirapalli District

The Bharath Heavy Electricals Limited established one of its Manufacturing units in Tiruchirappalli for producing High Pressure Boilers in 1961 and envisaged creation of ancillary units in the Private Sector, in and around Tiruchirappalli to off load items of Low and Medium Technology. As a result in the last three decades a phenomenal growth of Small Scale Industries numbering as on date to 400 units have been set up by entrepreneurs in Thuvakkudi, Ariyamangalam, Thiruverumbur Industrial estates. The Industrial units are giving gainful and consistent employment to nearly 18,000 people. Apart from BHEL other PSUs HAPP, OFT and Railway Workshop at Ponmalai are also playing pivotal role in the industrial growth of the District[15].

[15] https://www.dictiruchi.in/scenario.html

Table 3.29 List of industries in the study area

Sl. No.	Industries	Distance	Direction
1	EID Parry Sugar Factory, Pettavaithalai (not in operation)	1.87 km	E
2	Ajay mat industry	3.63 km	NE
3	Boss crafts mat Industry	5.28 km	NE
4	T.R mat industry	6.39 km	NW
5	Sri vethaa dairy private limited	6.42 KM	NW
6	Sri Aiyappa SS Steel	6.79 km	NW
7	VB&SONS Korai mat manufacturing Industries	7.91 km	NW
8	Biotrack Foods (P) Ltd	8.04 km	SW

Table 3.30 Demography Social Profile & Literacy details of the study area villages[16]

SL No	Name	Taluk & District	No _HH	TOT _P	TOT _M	TOT _F	P _SC	P _ST	P _LIT	M _LIT	F _LIT	TOT _WORK _P	TOT _WORK _M	TOT _WORK _F	MAIN WORK _P	MARG WORK _P
	0-2 KM Radius Villages															
1	Pettavathalai	Srirangam & Tiruchirappalli	2558	9594	4702	4892	1528	3	7359	3888	3471	4346	2784	1562	4084	262
2	Kumaraman galam		*Data not available*													
	2-5 KM Radius Villages															
3	Nadupatti	Srirangam & Tiruchirappalli	1200	5177	2583	2594	594	0	3309	1921	1388	2906	1593	1313	2731	175
4	Metu Mardur	Kulittalai & Karur	*Data not available*													
5	Panikkampatti															
6	Tirshapur															
7	Mela Panickampatti															
8	Panikkampatti															
9	Bangalapudur															
10	Poyyamani		1411	5486	2704	2782	1722	1	3899	2135	1764	2848	1678	1170	2350	498
11	Rajendram (North)		1103	4212	2073	2139	1060	9	3252	1733	1519	1871	1208	663	1791	80
12	Thanneerppalli		*Data not available*													
13	Vellur		1097	4127	2059	2068	586	0	2871	1586	1285	2362	1286	1076	2019	343
14	Mangarai Pettai			*Data not available*												
15	Umaiyalpuram		231	776	388	388	391	0	486	280	206	323	244	79	297	26
16	Savanthilinga puram		606	2194	1080	1114	1044	8	1438	799	639	1244	676	568	1042	202
	5-10 KM Radius Villages															
17	Sirugamani (TP)	Musuri & Tiruchirappalli	2801	10743	5273	5470	2469	15	8111	4352	3759	4436	3077	1359	4020	416
18	Musiri		63161	231655	115774	115881	46739	164	159152	88075	71077	122718	70921	51797	108597	14121
19	Kulithalai		14891	57515	28283	29232	15802	16	38415	21152	17263	29605	17251	12354	27659	1946
20	M.Pudupatti West		1691	6540	3267	3273	1313	2	4545	2523	2022	3343	1968	1375	3194	149
21	M.Pudupatti East		813	3273	1713	1560	495	23	2094	1258	836	1714	1003	711	1506	208
22	Soriyappati		*Data not available*													
23	Karuthalampatti															
24	Kamatchipatti		250	913	465	448	79	0	516	298	218	567	293	274	388	179

[16] Primary Census Abstract-Census of India 2011

SL No	Name	Taluk & District	No _HH	TOT _P	TOT _M	TOT _F	P _SC	P _ST	P _LIT	M _LIT	F _LIT	TOT _WORK _P	TOT _WORK _M	TOT _WORK _F	MAIN WORK _P	MARG WORK _P
25	Rakkampatti		*Data not available*													
26	Nacham Patti															
27	Thinnakonam		1079	4118	2089	2029	332	0	2431	1430	1001	2439	1266	1173	2206	233
28	Veeramanipatti		1192	4151	2059	2092	1167	0	2786	1564	1222	2180	1290	890	2009	171
29	Salapatti		*Data not available*													
30	Antharapatti															
31	Kollukattipalayam															
32	Senthamangudi															
33	Evur		1164	4324	2127	2197	804	0	3126	1711	1415	2138	1327	811	2116	22
34	M Karuppampatti		*Data not available*													
35	Kondunthurai															
36	Panchampatti															
37	Kottathur		1373	4532	2140	2392	2204	0	3042	1579	1463	2665	1356	1309	2645	20
38	Amoor		917	3410	1703	1707	853	0	2449	1356	1093	1967	1109	858	1786	181
39	Manapalayam		*Data not available*													
40	Alagapatti	Tattayyangarpettai & Tiruchirapalli	903	3100	1499	1601	183	0	2117	1181	936	1804	948	856	1740	64
41	Velakkanatham	Srirangam Tiruchirappalli	*Data not available*													
42	Perugamani		932	3748	2081	1667	759	1	2937	1770	1167	1652	1069	583	1562	90
43	Nangavaram															
44	Savarimedu															
45	MV Parai South															
46	Maduvandan parai															
47	Nachalur															
48	Kellapatti															
49	Melapatti															
50	Kanakkappillaiyur															
51	Karungalapalli															
52	Onthampatti															
53	Vaiganallur (South)		1690	6538	3240	3298	111	0	3944	2228	1716	3482	2029	1453	3389	93
54	Kalingapatti	Manapparai & Tiruchirappalli	276	1113	562	551	226	0	764	436	328	528	318	210	363	165
Total			**101339**	**377239**	**187864**	**189375**	**80461**	**242**	**259043**	**143255**	**115788**	**197138**	**114694**	**82444**	**177494**	**19644**

Source: *Primary Census Abstract-Census of India 2011,* ***Note:*** *Highlighted villages were selected for Socio-economic survey HH: Households, TOT_P: Total Population, Male, Female, P_06 :< 6 years Children population, T_SC: Total Schedule Caste Populations, T_ST: Total Scheduled Tribe Populations, T_L: Total Literates Male, Female, T_WRK_P: Total Working Population, MARG: Marginal Workers.*

3.11.4.6 Population Projections for the Next Five Decades in Study Area Villages

Population projections involve estimating future population growth based on past and present demographic trends. These projections are neither precise predictions nor definitive forecasts; rather, they represent an approximation between the two. For the villages within the study area, population projections were estimated using the Arithmetical Increase Method over a period of five decades. The available data pertains only to these villages.

Table 3.31 Population Projections for Study Area Villages (Next 50 Years)

Village Name	Population in 1991	Population in 2001	Population in 2011	Difference		Average Growth	Decade-Wise Projected Populations				
				(2001-1991)	(2011-2001)		2031	2041	2051	2061	2071
Pettavathalai	7610	8766	9594	1156	828	992	10586	11578	12570	13562	14554
Nadupatti	4563	4556	5177	-7	621	307	5484	5791	6098	6405	6712
Poyyamani	5023	5258	5486	235	228	232	5718	5949	6181	6412	6644
Vellur	3282	3801	4127	519	326	423	4550	4972	5395	5817	6240
Umaiyalpuram	811	826	776	15	-50	-18	759	741	724	706	689
Savanthilingapuram	643	2129	2194	1486	65	776	2970	3745	4521	5296	6072
Rajendram (North)	4013	4195	4212	182	17	100	4312	4411	4511	4610	4710
Kulithalai	23996	27910	32178	3914	4268	4091	36269	40360	44451	48542	52633
Musiri	22103	27941	28727	5838	786	3312	32039	35351	38663	41975	45287
M.Pudupatti West	3375	5087	6540	1712	1453	1583	8123	9705	11288	12870	14453
M.Pudupatti East	2810	2799	3273	-11	474	232	3505	3736	3968	4199	4431
Alagapatti	168	3213	3100	3045	-113	1466	4566	6032	7498	8964	10430
Kamatchipatti	720	787	913	67	126	97	1010	1106	1203	1299	1396
Thinnakonam	3534	3633	4118	99	485	292	4410	4702	4994	5286	5578
Veeramanipatti	4046	4297	4151	251	-146	53	4204	4256	4309	4361	4414
Evur	3923	4163	4324	240	161	201	4525	4725	4926	5126	5327
Kottathur	4391	4877	4532	486	-345	71	4603	4673	4744	4814	4885
Amoor	2926	3520	3410	594	-110	242	3652	3894	4136	4378	4620
Sirugamani (TP)	9323	9994	10743	671	749	710	11453	12163	12873	13583	14293
Kalingapatti	974	958	1113	-16	155	70	1183	1252	1322	1391	1461
Vaiganallur(South)	5158	5446	6538	288	1092	690	7228	7918	8608	9298	9988

3.11.5 Primary Data Results

A judgmental and purposive sampling approach was employed to select villages for the detailed socio-economic surveys. This method was chosen to ensure the inclusion of settlements that were geographically, environmentally, and demographically positioned to experience the greatest impact from the project. A total of 8 villages were selected from among the 54 villages located within the project's 10 km radius. All selected villages fell within a 0–5 km radius, where the intensity of impact was expected to be the highest.

Table 3.32 Selection of Sample Villages and Criteria for Their Inclusion

Sl.No	Name of the village	Survey Method	Criteria followed
1	Pettavathalai	FGDs/ Household Survey	Nearby habitations from the project boundary were considered for the survey. Villages within a 2 km radius are likely to experience greater impacts; therefore, these villages were selected for the survey.
2	Kumaramangalam		
3	Nadupatti		Wind rose analysis for October 2023 shows that the predominant wind directions were from the East and West, followed by the North-East and North-West. Based on this pattern, villages located in the downwind directions (W, E, SW, and SE) were prioritized for the socio-economic survey to assess the potential influence of the proposed project. These villages may be more likely to experience impacts from airborne pollutants such as dust and bagasse emissions, which could affect human health and agricultural productivity.
4	Ariyampatti		
5	Pannikkampatti		
6	Mettu Marudur		
7	Tirshapur		
8	Sirugamani		

3.11.5.1 Demographic Characteristics and Literacy Levels

The primary survey covered eight villages in the study area. In Pettavaithalai and Mettu Marudur, two Focus Group Discussions (FGDs) were conducted in each village along with random door-to-door household surveys, while one FGD was conducted in each of the remaining villages. Each FGD included 6–10 participants, resulting in 86 respondent households representing a total population of 413 individuals, with an average household size of 5 persons.

The survey reveals a 90% literacy rate among the respondents. Of these, 25% have completed primary or higher primary education, 40% have attained secondary education, 10% have completed pre-university studies, and another 15% hold graduate-level or technical qualifications, indicating a well-educated rural community with strong foundational literacy.

According to the 2011 Census, the average literacy rate in the study area was 68.66% the current findings demonstrate a significant improvement, showing a nearly 23% increase in literacy levels over the last decade, highlighting substantial progress in educational access and awareness.

3.11.5.2 Occupational Distribution and Income Levels of Respondents

The analysis of occupational structure and income sources indicates that agriculture and allied activities continue to be the primary means of livelihood for the majority of the surveyed population. Most respondents are engaged as farmers, while smaller proportions work as

agricultural daily-wage labourers. Although many participants were hesitant to disclose specific income details during the survey, it was evident that all respondents were aware of the proposed project and its potential socio-economic implications. Among those who shared income information, the average annual household income ranged from Rs. 20,000 to Rs. 1,00,000, with variations largely influenced by landholding size, crop productivity, and the nature of employment.

As per the 2011 Census, the working population in the sampled villages was 52.26%. Based on the primary survey, this has now increased to 100%, reflecting a significant rise in employment opportunities and overall economic engagement within the study area.

3.11.5.3 Agricultural Practices and Activities in the Study Area

Agriculture and allied activities constitute the principal source of livelihood for the local population within the study area. The region largely depends on the Cauvery River system for irrigation through both canal networks and groundwater sources. Groundwater is generally available at depths ranging from 50 to 100 feet. Major crops cultivated in the study area include paddy, millets, pulses, banana, sugarcane, cotton, and various vegetable crops. Canal irrigation is predominantly used for agricultural activities, supplemented by groundwater resources. This combined irrigation system enhances agricultural reliability, supports diverse cropping patterns, and significantly contributes to overall agricultural productivity in the region.

These agricultural practices play a vital role in ensuring local food security and sustaining the rural economy. Agriculture also forms the backbone of livelihood for farmers and agricultural labourers, while contributing substantially to the region's economic stability and socio-economic development.

3.11.5.4 Availability of Basic Infrastructures

All villages within the study area are equipped with essential infrastructure facilities, including access to safe drinking water. Household water supply is provided under the Jal Jeevan Mission through the respective Gram Panchayats, and most villages also have drinking water purification centres, ensuring a reliable and continuous supply of potable water.

However, the drainage infrastructure remains inadequate, as wastewater is managed primarily through open drains, which may pose sanitation and environmental concerns. Essential services such as electricity, telephone and mobile connectivity, primary schools, public distribution shops, and sanitation facilities (implemented under the Swachh Bharat Mission) are available across the region. These facilities collectively contribute to improving the overall living standards of the local population.

During the primary data collection process, the infrastructure available in the project area was ground-truthed with reference to the census of India-2011 district census handbook.

3.11.5.5 Health Status and Healthcare Infrastructure in the Study Area

The primary survey shows that common health issues in the area include asthma, cough, common cold & fever, and other minor respiratory ailments, with no severe diseases reported. Residents typically visit healthcare facilities once every two to three months, indicating a generally stable community health status. Healthcare access is supported by the Primary Health Centre at village levels. A several reputable medical facilities in the surrounding region are as below.

- Primary Health Centre at Pettavaithalai
- Government Taluk level Hospital at Kulithalai
- Arun Nursing Home, Pettavaithalai
- Annai Life Care hospital

Source: Primary survey

3.11.5.6 Socially Sensitive Receptors in the Study Area

There are no archaeological sites or monuments in the study area. However, there are socially sensitive receptors, including schools, primary health centres, and religious temples. The proposed project activities are not expected to impact these receptors, either directly or indirectly.



Anganawadi Centre at Pettavaithalai



Primary Health Centre at Pettavaithalai



Government Higher Primary School at Kumaramangalam



Government Primary School at Mettu Mardur

Fig 3.17 Photographs of socially sensitive receptors

3.11.5.7 Community Concerns and Consultation Outcomes

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, financial support for temple renovation and development, 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. Although a few residents initially showed confusion regarding the nature of the ethanol project, this reflects a need for better awareness rather than opposition. The community has also expressed expectations for CSR/CER initiatives, particularly in improving school infrastructure, primary health centres, and community facilities. Overall, the project is perceived as a potential driver for local socio-economic development, provided that community needs and environmental safeguards are adequately addressed.





Pettavaithalai



Panikkampatti



Kumaramangalam

Fig 3.18 Photographs of Socio-economic survey

3.11.6 Corporate Environment Responsibility (CER)

CER Plan proposal for improvement in the nearby vicinity will include creating infrastructural facilities lacking with special emphasis on health, education, environment, water and skill development in consultation with district authority and other organizations. Recommendations for Socio-economic activities based on interactions during the site visit related to the social environment have been highlighted in the study area.

Suggestions for the Corporate Environment Responsibility (CER) activities

- Renovation of Govt school buildings and construction of separate Toilets for Girls and Boys.
- Upgradation of Government Hospitals and provision of medicines & medical equipment
- Drinking-water purifier units in 2 Km radius villages.
- Technical and Skill development training programmes for local ITI holders.
- Integrated agricultural growth and modern agriculture training and techniques would certainly contribute to prosperity in the agriculture sector and reduce rural poverty through programs like farmers' training, nursery growing training and modern agriculture equipment distribution programs etc.
- Community health/awareness programmes, such as polio camps, eye camps, and blood donation camps, will be organized in the company and its vicinity from time to time to benefit employees, their families, and people living in the surrounding area.

Detailed CER plan has been provided in Section 7.1.1 of Chapter 7.

Chapter
4

ANTICIPATED ENVIRONMENTAL IMPACTS & MITIGATION MEASURES

4.1 Introduction

This chapter identifies and predicts the potential Impact of the industrial activities on different environmental components due to the construction and operation of the proposed project. The details of the potential impact on the biophysical and socio-economic components of the local environment due to the proposed activities and sub-activities are provided. Criteria for identification of impacts, likely wood & occurrence & Severity of the impacts are given in Table 4.1, 4.2 & 4.2.

Table 4.1 Criteria for identification of impacts

Environmental Component	No appreciable impact	Minor impact	Moderate impact	Major impact	High impact
Score	**±1**	**±2**	**±3**	**±4**	**±5**
LU/LC	Very Short Term (<1 year) & extent within 500 m	Short Term (1-3 year) & extent 500 m to 1 Km	Medium Term (3-5 year) & extent 1-3Km	Long Term (5-10 Year) & extent 3-5 Km	Very Long Term (>10Year) & extent >5 Km
Air Quality[1]	Minimal effect PM_{10} 0-50µg/m^3	Temporary air emissions with minor breathing discomfort PM_{10} 51-100µg/m^3	Moderate health effects causing discomfort to the people with lung diseases PM_{10} 101-200µg/m^3	Controlled / Uncontrolled air emissions causing breathing discomfort to people on prolonged exposure PM_{10} 201-300µg/m^3	Uncontrolled air emissions causing health effects and cause respiratory diseases PM_{10}>300µg/m^3
Noise Levels	Within the Limits	>10% of the Standards	>10-20% of the Standards	>20-30% of the Standards	>30% of the Standards
Surface water	No waste water generation	With Zero Liquid Discharge	Without Zero Liquid Discharge	Discharge to sewer / Nala / stream, etc within EP Rules Standards	Discharge to sewer / Nala / stream, etc exceeding the EP Rules Standards
Ground Water	Water drawl <50 KLD Safe	Water drawl 51-100 KLD Semi-Critical	Water drawl 101-250 KLD Critical	Water drawl 251-500 KLD Over exploited	Water drawl >500 KLD Notified

Environmental Component	No appreciable impact	Minor impact	Moderate impact	Major impact	High impact
Score	**±1**	**±2**	**±3**	**±4**	**±5**
Soil	Removal of top soil and reuse within the project site	Loss of 40% top soil	Unscientific disposal of fly ash, solid and hazardous waste, etc leading to imbalance in soil nutrients but can be restored	Transportation of top soil / excavated earth to an another site leading to cumulative impact	Contamination of soil due to long term release of pollutants
Ecology and Biodiversity	No tree removal and removal of shrubs and herbs can be restored. No impact on surrounding habitat / ecosystem	Tree removal with minor impact on surrounding habitat or ecosystem due to changes in physical parameters	Tree removal with moderate impact on surrounding habitat or ecosystem due to changes in physical parameters and impact on agro ecosystem	<1 ha of Forest land diversion with adverse impact on movement / migration of avifauna / faunal species	> ha of Forest land diversion with adverse impact on movement / migration of avifauna / faunal species
Solid/Hazardous waste	Majority of solid waste are by-products, which are segregated & stored in separated storage yards. Hazardous waste is nothing but used oil from DG sets & oil soaked cotton waste which will be stored at an identifies place, in a leak proof container & given to KSPCB Authorized re-processors.	In case of accidental Spillage of solid / hazardous and industrial process waste on ground.	Disposal of solid waste and hazardous waste on land leads to ground water and soil contamination on daily basis and creates bad condition and foul smell, also attracts disease vectors. If suitable mitigative measures adopted then soil & water contamination can be avoided	Disposal of hazardous waste and industrial process waste leads to permanent damage to soil in the surrounding and ground water quality, if suitable mitigative measures adopted then soil & water contamination can be avoided	Direct disposal of Hazardous and industrial solid waste for the longer period then there will result in permanent damage to soil and ground water, since the industrial solid waste contains heavy metals, chemicals and organic compounds.
Socio-economics	>8-10 Km distance from the project site. i.e. Projects which are not involving LA and R&R Activities. Impacts in terms of Environmental pollutions are very less and No changes in	>5-8 Km distance from the project site. Minor damages to local socio-economic environment i.e. Projects which are involving Land Acquisition activities. Impacts in terms of Environmental	>3-5 Km distance from the project site. Minor damages to local socio-economic environment i.e. Projects which are involving Land Acquisition activities. Impacts in terms of Environmental pollutions	>2-1 Km distance from the project site. Minor damages to local socio-economic environment i.e. Projects which are involving Land Acquisition & R&R activities. Impacts in terms of Environmental pollutions are Major and they	>0-1 Km distance from the project site. Minor damages to local socio-economic environment i.e. Projects which are involving Land Acquisition and R&R activities Impacts in terms of Environmental pollutions

Environmental Component	No appreciable impact	Minor impact	Moderate impact	Major impact	High impact
Score	±1	±2	±3	±4	±5
	population, migration and Gender inequality and less impact on Religious and ASI sites	pollutions are minor and no changes in Migration and Gender inequality and less impact on Religious and ASI sites	are moderate and they could be mitigate and no changes in Migration and Gender inequality and Minor impacts on Religious and ASI sites	could/couldn't be mitigate and slight changes in Migration and Gender inequality and moderate impacts on Religious and ASI sites	are Unacceptable and they could/couldn't be mitigate and Changes in Migration and Gender inequality may occur and Major impacts on Religious and ASI sites i.e: Spillage of chemicals, dust/bagasse may causes on local health and their agricultural yield may reduce Due to R&R activities migration and livelihood loss

Table 4.2 Likelihood and occurrence of impacts

Likelihood	Score	Occurrence
Rare	1	Occur one time during the project life cycle
Occasional	2	Occur few times during the project life cycle
Periodic	3	Occur annually during the project life cycle
Regular	4	Occurs several times in a year during the project life cycle
Frequent	5	Continuous every day during the Project life cycle

Table 4.3 Severity Assessment of the impacts

Negative Impacts			Positive Impacts	
Score	Category	Inference	Score	Inference
25	Extremely significant	Permanent irreversible adverse impact, alternatives to the project need to be explored.	25	Positive benefits
15-20	Highly significant	Appreciable but reversible adverse impact – mitigation measures are needed.	15-20	Major benefits

Negative Impacts			Positive Impacts	
Score	**Category**	**Inference**	**Score**	**Inference**
10-15	Moderately significant	Significant adverse impacts, most of the impacts are reversible. Mitigation measures are crucial	10-15	Moderate benefits
5-10	Less significant	Appreciable but reversible adverse impact – mitigation measures are needed.	5-10	Minor benefits
1-5	Negligible significance	No appreciable beneficial impact / adverse impact	1-5	Positive impact

4.2 Land environment

Table 4.4 Impact scoring and significance for land environment

Project Activity / Aspect	Impact	Impact on		Type of Impact*	Impact Scoring			Significance	Mitigation Measures
		LU	SC		Severity (S)	Likelihood (L)	Score (S x L)		
Construction phase									
Change in Land Cover	Change in land cover from vacant land to industrial	₦		N, P	-5	1	-5	Negligible significant	-
Excavation activities	Loss of top soil		₦	N, P	-1	5	-5	Less significant	Top soil will be stored separately and use it for green belt development
Operation phase									
Handling & storage of condensate/ Ethanol	Discharge of untreated condensate/ethanol from the industry on the land leads to soil contamination		₦	N, P, AN	-3	5	-15	Highly significant	Ethanol will be stored in leak proof MS tankers on impervious layer. The generated condensate will be treated in CPU of 2000 KLD & reused in process with ZLD system.
Operation of boiler	Deposition of fly ash on adjacent agriculture lands leads to loss in yield.	₦	₦	N, P, AN	-3	5	-15	Highly significant	Provision of ESP of 99.8% efficiency to control spillage of fly ash on adjacent lands.
Operation of DG Sets	Soil contamination due to spillage of diesel or used oil		₦	AN, T	-3	2	-6	Less significant	-

Project Activity / Aspect	Impact	Impact on		Type of Impact*	Impact Scoring			Significance	Mitigation Measures
		LU	SC		Severity (S)	Likelihood (L)	Score (S x L)		
Diesel and Used oil storage	Soil contamination due to spillage		₦	AN, T	-3	2	-6	Less significant	Designated storage area with impervious lining shall be provided.
Operation of STP / ETP/ CPU	Spillage/ leakage of untreated effluent / sewage / condensate leads to soil contamination		₦	AN, T	-5	3	-15	Highly significant	Regular inspection of plant & regular monitoring will be carried out at inlet and out let to take necessary action.
Decommissioning Phase									
Dismantling of plant and machinery	Leaching of contaminated washed water and improper storage of solid and hazardous waste		₦	N, P	-5	2	-10	Moderately significant	Due care shall be taken to store the contaminated washed water in a separate bins and neutralize after characterization.
Site Clearing	Change in land use from industrial to waste land	₦		N, P	-1	2	-2	Less significant	-

* Type of Impact –O: One Time; N: Normal; AN: Abnormal; E: Emergency; Duration of Impact –T: Temporary; P: Long-Term/ Permanent, ₦ - Negative, ₱ - Positive.

4.3 Solid and Hazardous Waste Generation

Table 4.5 Solid waste Generation and its disposal

Waste	Quantity	Mode of disposal
Construction phase		
Organic waste	27 kg/day	Handed over to nearest Municipal body
Inorganic waste	13 kg/day	Handed over to TNSPCB authorized recyclers
Plastic waste	5 kg/day	
Operation phase		
Organic waste	72 kg/day	Handed over to nearest Municipal body
Inorganic waste	36 kg/day	Handed over to TNSPCB authorized recyclers
Plastic waste	12 kg/day	
e-waste	10 kg/A	
Battery	15 kg/A	

Waste	Quantity	Mode of disposal
Biomedical	15 kg/A	Handed over to CBMWTF
Hazardous waste	2.5 kg/A	Used oil is used as lubricants & oil soaked cotton waste is used for light up/ start-up of for Boiler
Yeast sludge	94 TPD	Used as Manure for Greenbelt development
CPU sludge	100 TPD	
STP sludge	1 kg/day	Used as Manure for Greenbelt development
ETP Sludge	15 kg/day	
Ash from Boiler	36 TPD	Inhouse brick manufacturing unit
DDGS	300 TPD	Will be sold as cattle feed/fish feed

Table 4.6 Impact scoring and significance for Solid and Hazardous waste

Project Activity / Aspect	Impact	Impact on		Type of Impact*	Impact Scoring			Significance	Mitigation Measures
		SW	HW		Severity (S)	Likelihood (L)	Score (S x L)		
Construction phase									
Domestic Waste from the labour colony	Contaminate soil and groundwater.	₦		N, T	-1	1	-1	Negligible significant	The generated waste is segregated and handed over to local municipal body.
Construction waste such as concrete waste, debris, excavated soil.	Loss of biodiversity.	₦		N, O, T	-2	1	-2	Negligible significant	All the construction waste and debris will be reused for construction activities and excavated top soil will be used for greenbelt development and excess will be used for construction.
Hazardous waste such as used oil and grease, paints, solvents, thinners. Metal scrape, oil soaked cotton waste.	Contaminate soil and groundwater and loss of biodiversity.		₦	O, AN, T	-2	1	-2	Negligible significant	The generated hazardous waste will be stored at an identified place in a secure manner and Handed over to authorized agency.
Operation phase									
Bottom ash and fly ash	Leads to air contamination and effects the human health	₦		N, P, AN, T	-4	4	-16	Highly significant	Boiler ash 36 TPD will be used for manufacturing bricks at inhouse brick manufacturing unit.

Project Activity / Aspect	Impact	Impact on		Type of Impact*	Impact Scoring			Significance	Mitigation Measures
		SW	HW		Severity (S)	Likelihood (L)	Score (S x L)		
Yeast sludge	Effect to Soil/land environment and in turn ground water pollution.	₦		N, P, AN	-2	2	-4	Negligible significant	Sludge (Yeast sludge - 94 TPD) will be dried in drying beds and used as manure.
DDGS	Leads to odor nuisance	₦		N, P, AN, T	-2	2	-4	Negligible significant	Generated DDGS (300 TPD) will be sold as cattle feed/fish feed.
Domestic solid waste	Leads to ground water contaminate.	₦		N, P	-2	2	-4	Negligible significance	The organic waste of 72 Kg/day will be handed over to local municipal body and inorganic waste of 36 kg/day will be handed over to TNPCB authorized recyclers.
ETP/STP/CPU Sludge	Effect to Soil/land environment and in turn ground water pollution.		₦	N, P, AN	-4	4	-16	Highly significant	Sludge (CPU 100 TPD, STP Sludge 1 kg/day,) will be dried in filter press and used as manure.

* Type of Impact –O: One Time; N: Normal; AN: Abnormal; E: Emergency; Duration of Impact –T: Temporary; P: Long-Term/ Permanent, ₦ - Negative, ₱ - Positive.

4.4 Air Environment

Table 4.7 Impact scoring and significance for Air Quality

Project Activity / Aspect	Impact	Impact on	Type of Impact*	Impact Scoring			Significance	Mitigation Measures
		AQ		Severity (S)	Likelihood (L)	Score (S x L)		
Construction phase								
Site clearance for construction activities	Dust generation	₦	O,T	-1	1	-1	Negligible Significance	Water sprinkling will be carried out at construction site
Excavation activities	Dust generation	₦	O,T	-1	1	-1	Negligible Significance	
Transportation of Raw materials	Dust may arise due to movement, Fugitive emissions	₦	N, T	-2	2	-4	Negligible Significance	The vehicles used for transportation will be certified valid PUC.
Construction activities	Dust generation, Fugitive emissions	₦	N, T	-2	2	-4	Negligible Significance	The machinery used for construction purpose will be properly maintained and serviced.

Project Activity / Aspect	Impact	Impact on	Type of Impact*	Impact Scoring			Significance	Mitigation Measures
		AQ		Severity (S)	Likelihood (L)	Score (S x L)		
								It will be ensured that diesel powered vehicles & construction machineries are properly maintained to minimize the exhaust emissions.
Operation phase								
Transportation, loading & unloading of raw materials/ finished products	Dust generation, Fugitive emissions	₦	N, P	-2	5	-10	Moderately significant	Raw materials will be carried out in covered trucks. Unloading of materials will be done at a minimal height to reduce fugitive emissions. Water sprinkling will be carried out at all the internal roads & speed limit will be restricted to control dust pollution.
Ash generated from boiler	Dust generation, Fugitive emissions	₦	N, P	-3	5	-15	Moderately significant	ESP will be connected to stacks & the generated ash will be used to manufacture bricks at inhouse brick manufacturing unit, water sprinkling will be carried out near storage area.
Operation Boiler (100 TPH)	Emission of PM, SO_2, NO_2 & CO & other gaseous pollutants	₦	AN, P	-4	5	-20	Highly significant	APCEs such as ESP with stack heights of 70 m will be provided to reduce Air Emissions.
	Fugitive Emissions	₦	AN, P	-3	5	-15	Highly significant	Water sprinkling will be carried out inside the plant
Operation of DG Sets (2 X 750 KVA)	Emission of PM, SO_2, NO_2 & CO & other gaseous pollutants	₦	N, T	-2	4	-8	Less significant	Acoustic enclosures with stack height of 30 m will be provided
Mechanical failure of APCEs such as ESP	Dust generation & release of air pollutants directly to environment	₦	E,AN,T	-5	3	15	Highly significant	Immediate action will be taken &standard operating procedures, Onsite and Offsite emergency plan will be followed during emergency.
Decommissioning Phase								
Dismantling of plant and machinery	Emission of PM, SO_2, NO_2 & CO &	₦	O, AN, T	-3	1	-3	Negligible Significance	Cleaning of site

Project Activity / Aspect	Impact	Impact on	Type of Impact*	Impact Scoring			Significance	Mitigation Measures
		AQ		Severity (S)	Likelihood (L)	Score (S x L)		
	other fugitive emissions, Dust generation							
Site Clearing	Dust generation	₦	O, AN, T	-3	1	-3	Negligible Significance	Water sprinkling will be done after clearance

* Type of Impact –O: One Time; N: Normal; AN: Abnormal; E: Emergency; Duration of Impact –T: Temporary; P: Long-Term/ Permanent, ₦ - Negative, ₽ - Positive.

4.4.1 Modelling Procedure

4.4.1.1 Methodology

Prediction of ground level concentration (GLC's) due to Establishment of Cane Juice/Molasses based Dual feed Distillery of capacity 300 KLD" with 3500 TCD Sugar cane, 10 MW Co-generation Unit and 4 MW Captive Power Generation from Incineration Boiler has been made by AERMOD model. AERMOD is an US- EPA approved model to predict the air quality. The model uses rural dispersion and regulatory defaults options as per guidelines on air quality models. As the model can be run based on the Indian Terrain conditions automatically, elevated terrain is considered. Meteorological inputs required are hourly wind speed and direction, ambient temperature, stability class and mixing height and wind exponents.

4.4.1.2 Procedure and structure of Computation

a. Selection of Locations:

The locations are selected around the proposed Sugar Unit, Co-gen Unit and Distillery Unit covering an area of 10 Km radius from the centre of the proposed project. The entire area has been put on grid network and grid spacing has been taken as 500 m.

b. Structure of Computation:

It was planned to compute the following

- The 24 hourly averaged incremental concentration with hourly data.
- The identification of grid point having peak concentration for the incremental values.
- Preparation of isopleths of various pollutants.
- Emission rate of each pollutant is based on their composition in the fuel used.
- Model is run for the operation of all the boilers to know the maximum impact due to the project with and without the air pollution control measures.

Table 4.8 Model Input for Proposed 100 TPH

Sl. No	Parameter	Units	100 TPH	
1	Stack Height	m	70	
2	Stack Diameter	m	3.2	
3	Stack gas temperature	^{0}C	140	
4	Stack exit gas velocity	m/s	8.42	
5	Fuel Type	-	Rice Husk	
6	Concentration	g/sec	Without APC	With APC
	PM	g/sec	694.44	1.60
	SO_2	g/sec	52.36	0.065
	NO_2	g/sec	26.58	0.026
7	Air Pollution Control Device	-	ESP – 1 No's	

2 x 750 KVA DG set will be used with 30 m AGL chimney. Since the operation of DG is very limited, for the prediction of Ground level concentration, the same is not considered.

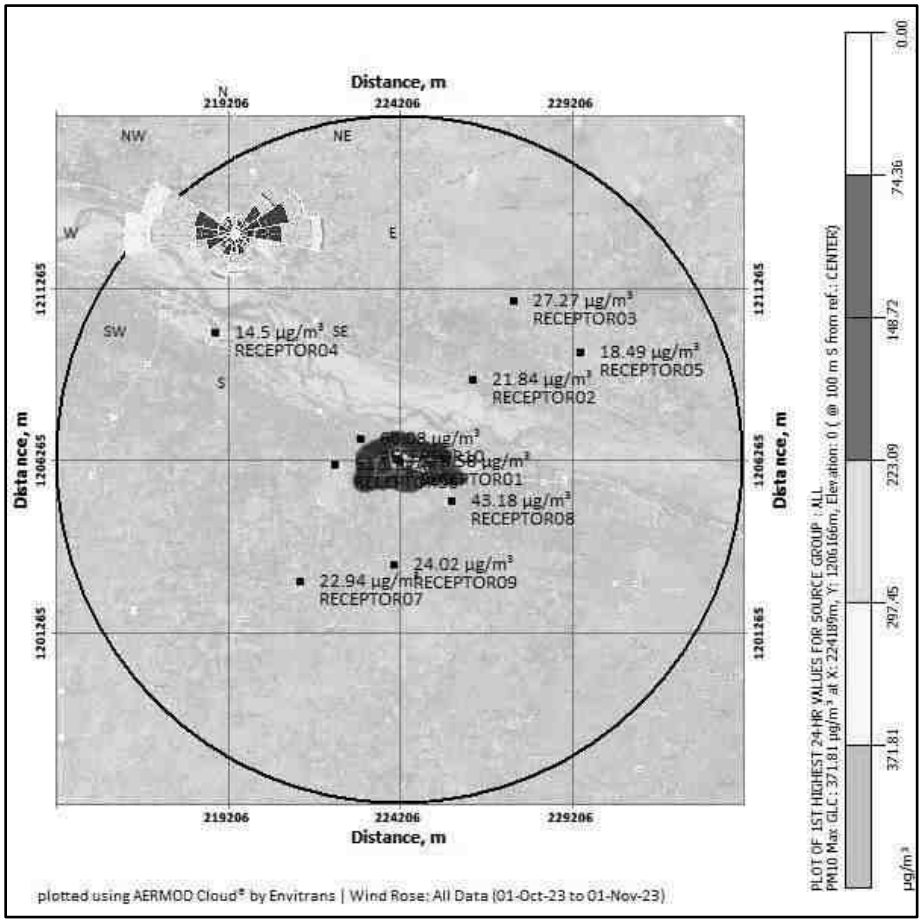


Fig 4.1 Isopleth drawn for PM without mitigation measures for proposed 100 TPH

Maximum concentration predicted is 371.81 µg/m^3 at a distance of 100 m towards S

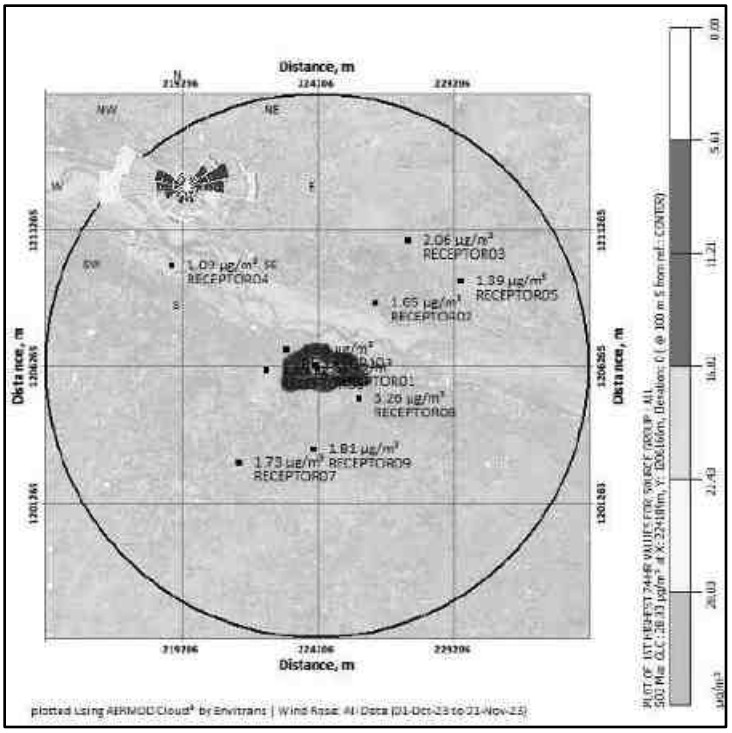


Fig 4.2 Isopleth drawn for SO_2 without mitigation measures for proposed 100 TPH

Maximum concentration predicted is 28.03 µg/m^3 at a distance of 100 m towards S

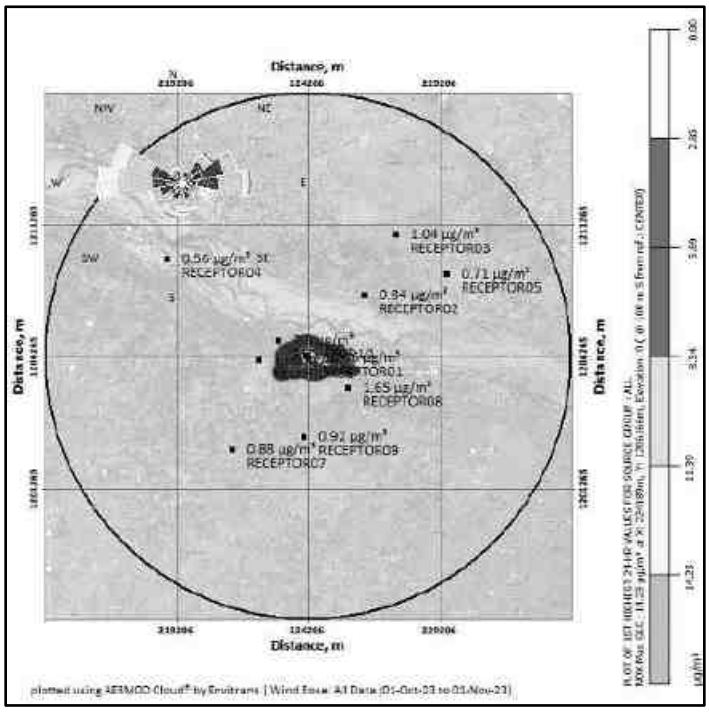


Fig 4.3 Isopleth drawn for NO_2 without mitigation measures for proposed 100 TPH

Maximum concentration predicted is 14.23 µg/m^3 at a distance of 100 m towards S

4.4.1.3 Air Pollution Control Equipment

Technical Specification of Electrostatic Precipitator

Table 4.9 Technical Specification of Electrostatic Precipitator

Design volume	1,13,000 m^3/hr
Design temperature	130^0 C
Efficiency	99.8 %
No of gas passages	18
Velocity through ESP	0.48 m/s
Treatment time	21.3 sec
No of fields	3
Inlet dust concentration	5 g/Nm^3 For Bagasse
Outlet dust concentration	< 100 mg/m^3

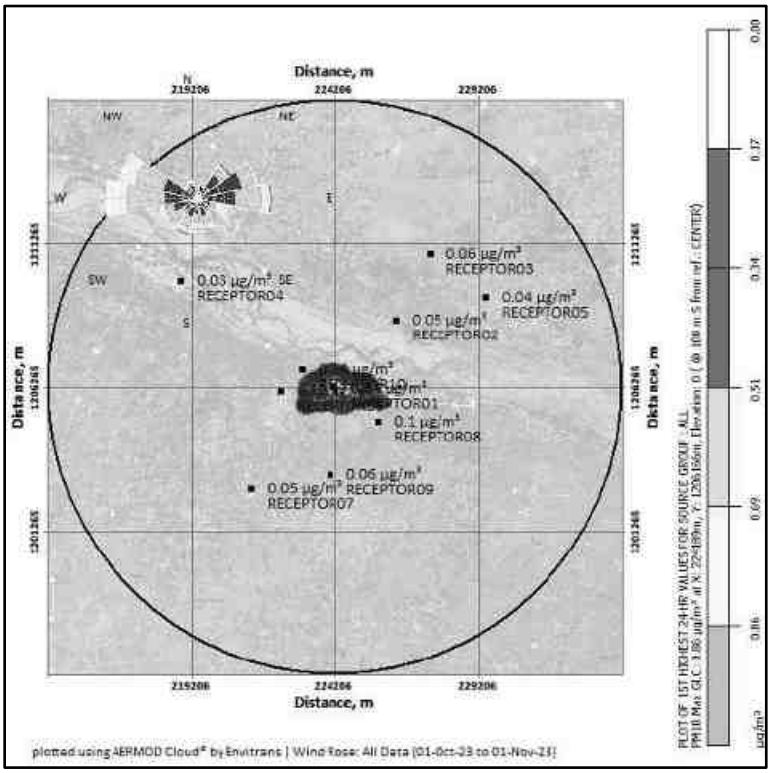


Fig 4.4 Isopleth drawn for PM with mitigation measures for proposed 100 TPH

Maximum concentration predicted is 0.86 µg/m^3 at a distance of 100 m towards S

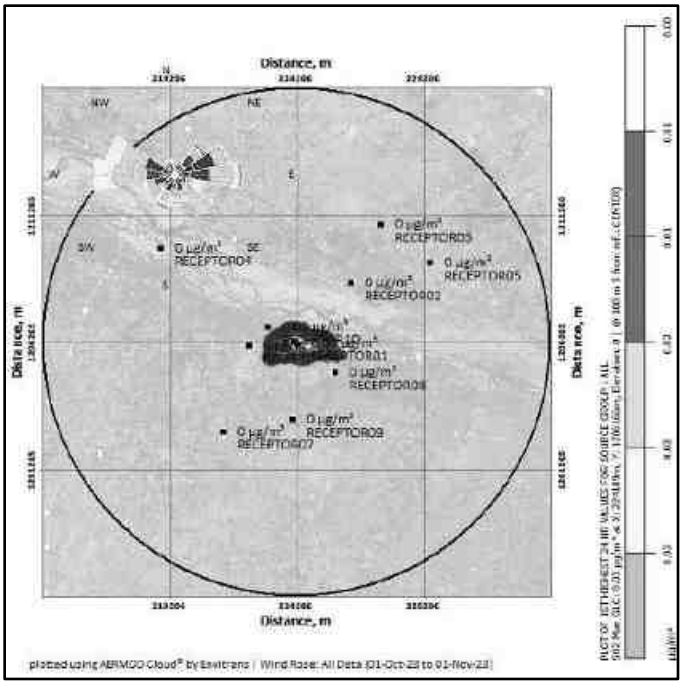


Fig 4.5 Isopleth drawn for SO_2 with mitigation measures for proposed 100 TPH

Maximum concentration predicted is 0.03 µg/m^3 at a distance of 100 m towards S

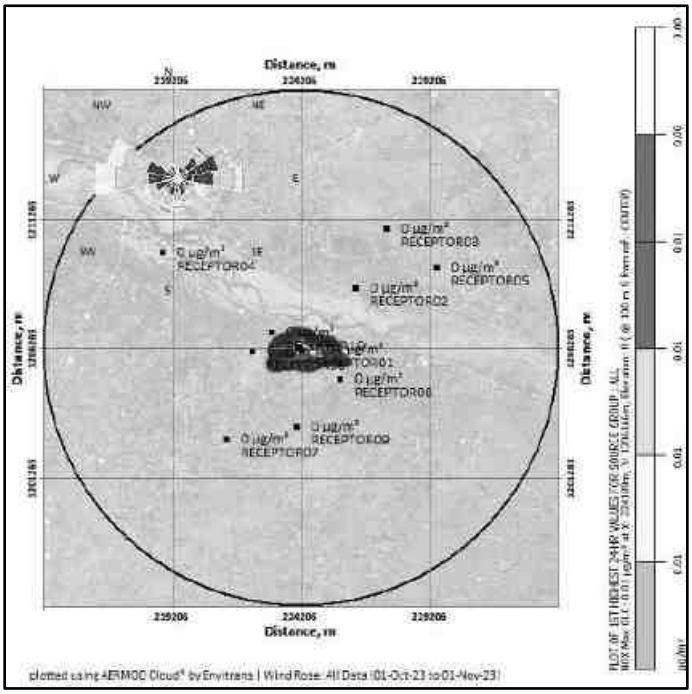


Fig 4.6 Isopleth drawn for NO_2 with mitigation measures for proposed 100 TPH

Maximum concentration predicted is 0.01 µg/m^3 at a distance of 100 m towards

Table 4.10 Impact on Various Locations with & without APC (ESP) Worst case scenario

Sl. No.	Location Name	Distance & Direction	Pollutant	Concentration in (μg/m³)					NAAQS 2009 Standards, (μg/m³)
				Baseline	Incremental GLC without mitigation	Total Predictive value	Incremental GLC with mitigation	Total Predictive Value	
1	Project Site	-	PM_{10}	46.71	278.58	325.29	0.84	47.55	100
			SO_2	10.3	21	31.3	0.03	10.33	80
			NO_2	8.02	10.66	18.68	0	8.02	80
2	Ayyampalayam	3.37 km, NE	PM_{10}	51.4	21.84	73.24	0.05	51.45	100
			SO_2	10.69	1.65	12.34	0	10.69	80
			NO_2	9.17	0.84	10.01	0	9.17	80
3	Kollukattipalayam	5.64 km, NE	PM_{10}	48.9	27.27	76.17	0.06	48.96	100
			SO_2	10.15	2.06	12.21	0	10.15	80
			NO_2	8.71	1.04	9.75	0	8.71	80
4	Musiri	5.86 Km, NW	PM_{10}	54.7	14.5	69.2	0.03	54.73	100
			SO_2	11.68	1.09	12.77	0	11.68	80
			NO_2	9.74	0.56	10.3	0	9.74	80
5	Karuppampatti	6.07 km, NE	PM_{10}	56.2	18.49	74.69	0.04	56.24	100
			SO_2	11.08	1.39	12.47	0	11.08	80
			NO_2	9.06	0.71	9.77	0	9.06	80
6	Kuchipatti	1.47 km, W	PM_{10}	55.7	51.1	106.8	0.12	55.82	100
			SO_2	10.94	3.85	14.79	0	10.94	80
			NO_2	9.4	1.96	11.36	0	9.4	80
7	Panikkampatti	3.97 km, SW	PM_{10}	44.5	22.94	67.44	0.05	44.55	100
			SO_2	10.05	1.73	11.78	0	10.05	80
			NO_2	8.14	0.88	9.02	0	8.14	80

Sl. No.	Location Name	Distance & Direction	Pollutant	Concentration in (μg/m³)					NAAQS 2009 Standards, (μg/m³)
				Baseline	Incremental GLC without mitigation	Total Predictive value	Incremental GLC with mitigation	Total Predictive Value	
8	Karungalpatti	6.03 km, W	PM_{10}	47.4	43.18	90.58	0.1	47.5	100
			SO_2	10.69	3.26	13.95	0	10.69	80
			NO_2	8.94	1.65	10.59	0	8.94	80
9	Adinattam	2.10 km, S	PM_{10}	53.4	24.02	77.42	0.06	53.46	100
			SO_2	11.13	1.81	12.94	0	11.13	80
			NO_2	8.37	0.92	9.29	0	8.37	80
10	Marudur RF	320 m, N	PM_{10}	45.6	60.08	105.68	0.14	45.74	100
			SO_2	10.2	4.53	14.73	0.01	10.21	80
			NO_2	8.25	2.3	10.55	0	8.25	80

Table 4.11 Worst case scenario without APC

Pollutants	Base-line	Incremental	Total GLC	CPCB Standards
PM_{10}	48.9	371.81	420.71	100
SO_2	10.3	28.03	38.33	80
NO_2	8.02	14.23	22.25	80

Table 4.12 Worst case scenario with APC

Pollutants	Base-line	Incremental	Total GLC	CPCB Standards
PM_{10}	48.9	0.86	49.76	100
SO_2	10.3	0.03	10.33	80
NO_2	8.02	0.01	8.03	80

4.4.1.4 Impact of Transportation of Raw Materials and Finished Products

Anticipated Impacts

The industrial operation requires movement of vehicles due to transportation of raw materials and finished products. During operation phase 116 tankers/day on along 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). In order to ensure the safety of the passengers through both approach road and internal roads within project site will be anticipated from the project. The predicted concentrations of vehicular emissions are as follows;

Table 4.13 Concentration of Pollutants due to movement of Vehicles

SL. No.	Raw Material and Products Name	Quantity	No. of Trucks/Day	No. of Trucks/Annum (330 days Grains)
1	Grains	2850	27	8910
2	Chemicals/Nutrients	20 TPD	1	330
3	Ethanol	600 KLD	17	5610
4	DDGS	300 TPD	10	3300
5	CO_2	150 TPD	6	1980
		Total	**119**	**39270**

Note- Trucks (119 x 1.2 – 142.8 kWh /km-day)

Table 4.14 Emission Factors considered as per CPCB – Bharat Stage VI Standards, 2020

SL. No.	Parameter	Emission Factor for Heavy duty vehicles (gm/day –Kmh)
1	Particulate Matter	0.01
2	NOx	0.4
3	HC	0.16
4	CO	4.0
5	NH_3	<10 ppm

Table 4.15 Concentration of Pollutants due to movement of Vehicles

SL. No.	Parameter	Emission (gm/km-day) from 119 (Nos.) Heavy-Duty Trucks is 142.8 kWh/km-day	Emission (kg/km-h) from 119 (Nos.) Heavy-Duty Trucks is 142.8 kWh/km-day
1	Particulate Matter	0.73	0.03×10^{-3}
2	NOx	29.28	1.2×10^{-3}
3	HC	11.71	0.48×10^{-3}
4	CO	292.8	12.2×10^{-3}

Table 4.16 Emission Factors considered as per CPCB – Bharat Stage IV Standards, 2014

SL. No.	Parameter	Emission Factor for Heavy duty vehicles (gm/day –Kmh)
1	Particulate Matter	0.02

SL. No.	Parameter	Emission Factor for Heavy duty vehicles (gm/day –Kmh)
2	NOx	3.5
3	HC	0.96
4	CO	1.5

Table 4.17 Concentration of Pollutants due to movement of Vehicles

SL. No.	Parameter	Emission (gm/km-day) from 119 (Nos.) Heavy-Duty Trucks is 142.8 kWh/km-day	Emission (kg/km-h) from 119 (Nos.) Heavy-Duty Trucks is 142.8kWh/km-day
1	Particulate Matter	1.46	0.06×10^{-3}
2	NOx	256.2	10.67×10^{-3}
3	HC	70.27	2.92×10^{-3}
4	CO	109.8	4.5×10^{-3}

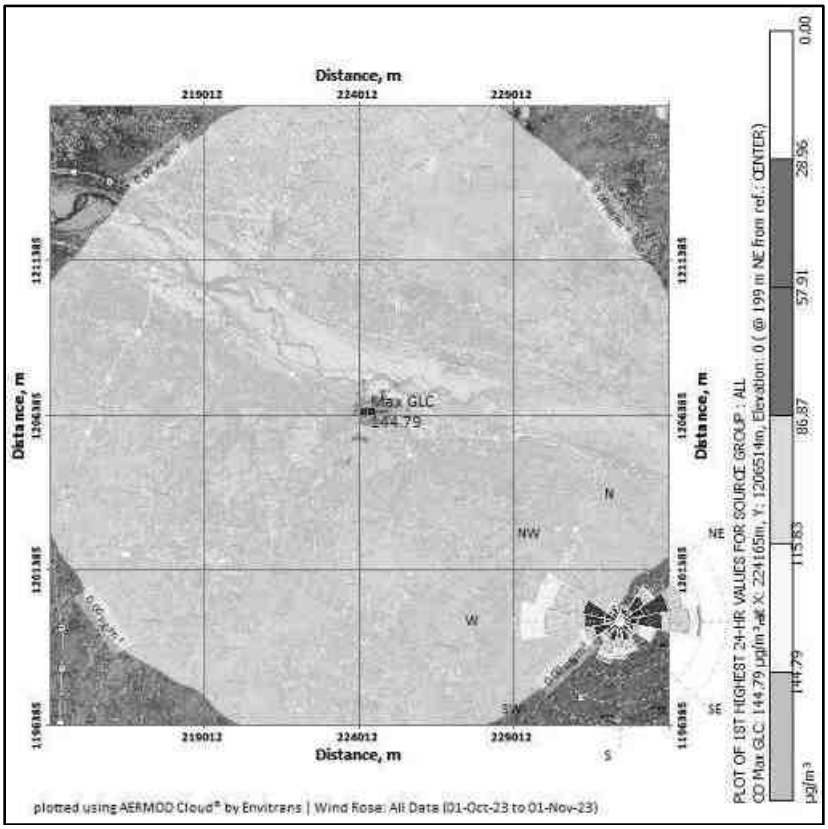


Fig 4.7 Isopleth drawn for CO

Maximum concentration predicted is 114.79 µg/m^3 at a distance of 199 m NE

4.5 Water Environment

Table 4.18 Impact scoring and significance for Water Environment

Project Activity / Aspect	Impact	Impact on WP	Type of Impact*	Impact Scoring			Significance	Mitigation Measures
				Severity (S)	Likelihood (L)	Score (S x L)		
Construction phase								
Sewage generation from the labour camp.	Soil & Groundwater contamination	₦	N,T	-2	5	-10	Moderately Significance	The generated sewage from labour camp will be treated in mobile STP.
Improper disposal of solid wastes	Soil & Groundwater contamination	₦	N,T	-2	2	-4	Negligible Significance	The generated solid wastes will handed over to authorized processors
Spillage of paints, solvents, hazardous wastes on ground	Soil & Groundwater contamination	₦	N,T	-2	2	-4	Negligible Significance	The hazardous wastes will be stored separately and handed over to TNPCB authorized vendors.
Operation phase								
Discharge of untreated thin slop	Soil & Groundwater contamination	₦	AN, P	-3	5	-15	High Significance	The generated spent lees and MEE condensate from the distillery unit will be treated in CPU of capacity 2000 KLD and treated condensate will be reused for process.
Sewage generation from the workers and wastewater from process like Boiler blow down, WTP reject and lab washing	Soil & Groundwater contamination	₦	N, P	-3	5	-15	High Significance	The generated wastewater from domestic activity will be treated in STP of capacity 20 KLD and treated water will be used for water sprinkling. Wastewater generated will be treated in ETP of capacity 300 KLD and the treated water will be

Project Activity / Aspect	Impact	Impact on WP	Type of Impact*	Impact Scoring			Significance	Mitigation Measures
				Severity (S)	Likelihood (L)	Score (S x L)		
								used for greenbelt maintenance.
Operation of STP/ETP/CPU	Spillage/ leakage of untreated leads to infiltration and contaminate ground water table	₦	AN, P	-5	3	-15	High Significance	Regular inspection & regular monitoring will be carried out at inlet and outlet to take necessary action.
Mechanical failure of STP/ETP	Soil & groundwater contamination, loss of plantation due to the treated water used for greenbelt development	₦	AN, E, P	-5	3	-15	High Significance	Regular inspection & regular monitoring will be carried out at inlet and outlet to take necessary action. Immediate action will be taken will be taken.
Decommissioning Phase								
Dismantling of plant and machinery	Contamination of groundwater due to dismantling activities	₦	O, N, T	-3	1	-3	Negligible Significance	Cleaning of site

* Type of Impact –O: One Time; N: Normal; AN: Abnormal; E: Emergency; Duration of Impact –T: Temporary; P: Long-Term/ Permanent, ₦ - Negative, ₱ -Positive.

4.6 Hydrology & Geology

Table 4.19 Impact scoring and significance for Hydrology Environment

Project Activity / Aspect	Impact	Impact on HG/GEO	Type of Impact*	Impact Scoring			Significance	Mitigation Measures
				Severity (S)	Likelihood (L)	Score (S x L)		
Construction phase								
Sewage generation from the labour camp.	Contamination of river, nalas and nearby irrigation canals leads to high nutrient loads causing eutrophication and	₦	N,T	-3	4	-10	Moderately Significance	The generated sewage from labour camp will be treated in mobile STP.

Project Activity / Aspect	Impact	Impact on HG/GEO	Type of Impact*	Impact Scoring			Significance	Mitigation Measures
				Severity (S)	Likelihood (L)	Score (S x L)		
	altered flow dynamics, causes hydrological cycle disruption due to varying evaporation and infiltration rates and leads to reduced yield and soil degradation.							
Excavation activities	The Project activity does not involve any large scale breaking of ground or rock formations except excavation for foundations and pillars to a limited depth. There might be collapse of foundation pits for erection of pillars & Footings. Fly rock is anticipated with blasting of rock in foundation pits.	P	N, T	-2	-2	4	Negligible significance	All the pits will be back filled after erection of Concrete pillars with aggregates and gravel. As such there is no threat to Geologic environment. The litho unit is massive and hard which is stable. The collapse can be avoided by formation of benches of 1.5 m to 3.0 m height for working conveniently and making access to sub surface levels for pit formation. The Fly rock can be contained with controlled blasting, deploying time delay detonators & placing of moist clay bags. Provision of earplugs and goggles to workmen is suggested

Project Activity / Aspect	Impact	Impact on HG/GEO	Type of Impact*	Impact Scoring			Significance	Mitigation Measures
				Severity (S)	Likelihood (L)	Score (S x L)		
Operation phase								
Discharge of sewage and effluent from industry	Soil & Groundwater contamination along with contamination of water in river, nalas and irrigation canals which leads to high nutrient loads causing eutrophication and altered flow dynamics, causes hydrological cycle disruption due to varying evaporation and infiltration rates and leads to reduced yield and soil degradation.	₦	AN, P	-3	5	-15	High Significance	The generated spent lees and MEE condensate from the distillery unit will be treated in CPU of capacity 2000 KLD and treated condensate will be reused for process. The generated wastewater from domestic activity will be treated in STP of capacity 20 KLD and treated water will be used for water sprinkling. Wastewater generated will be treated in ETP of capacity 300 KLD and the treated water will be used for greenbelt maintenance.
Improper Storm water management	Entry of stormwater into River Cauvery during monsoon	₦	AN, T	-3	3	-9	Less significant	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.
Water requirement for industrial activities	Increase in ground water table since there is no ground water drawl and water	P	N,P	+5	5	+25	Positive benefits	Water permission from WRD to lift water from Cauvery River will be

Project Activity / Aspect	Impact	Impact on HG/GEO	Type of Impact*	Impact Scoring			Significance	Mitigation Measures
				Severity (S)	Likelihood (L)	Score (S x L)		
	requirement is met from Cauvery River and stored rain water.							obtained and provision of Rain water harvesting ponds (47000 KL) will be ensured to meet the fresh water demands of the industry.

* Type of Impact –O: One Time; N: Normal; AN: Abnormal; E: Emergency; Duration of Impact –T: Temporary; P: Long-Term/ Permanent, ₦ - Negative, ₱ -Positive.

4.7 Noise Environment

Table 4.20 Impact scoring and significance for Noise Environment

Project Activity / Aspect	Impact	Impact on	Type of Impact*	Impact Scoring			Significance	Mitigation Measures
		NV		Severity (S)	Likelihood (L)	Score (S x L)		
Construction phase								
Site Clearance	Noise generation due to clearance activities	₦	N,T	-4	3	-12	Moderately Significance	Less noise generating equipment will be chosen
Excavation activities	Noise generation	₦	N,T	-4	2	-8	Less Significance	Less noise generating equipment will be chosen & the effect is short term.
Vehicular movement for transportation of construction materials	Noise generation due to vehicular movement	₦	N,T	-2	5	-10	Moderately Significance	Speed limit will be restricted to reduce vehicular noise at construction site Security officer will be appointed to control smooth flow of traffic
Construction activities	Noise generation	₦	N,T	-3	5	-15	Moderately Significance	PPEs will be provided to workers Restricted to working hours.
Operation phase								
Operation of boilers and other industrial	Noise generation	₦	N,P	-3	5	-15	Moderately Significance	PPEs will be provided to workers & Regular

Project Activity / Aspect	Impact	Impact on	Type of Impact*	Impact Scoring			Significance	Mitigation Measures
		NV		Severity (S)	Likelihood (L)	Score (S x L)		
activities as crushing, mixing & cutting, etc								maintenance of Machineries & equipment to reduce noise levels
Operation of Steam Turbine & DG sets	Noise & vibration generation	₦	N,P	-3	5	-15	Moderately Significance	Acoustic enclosures will be provided Placed on Anti vibrating mountings
Mechanical failure if equipment / machineries	Noise & vibration generation	₦	AN,T	-4	5	-20	High Significance	Regular maintenance & greasing of equipment. Regular checking of equipment & immediate action will be taken
Vehicular movement	Noise generation	₦	N,P	-3	5	-15	Moderately Significance	Speed limit will be restricted to 15 to 20 Km/ hr & trained security will be adopted to control traffic. Well parking area & roads are designed to control traffic.
Decommissioning Phase								
Dismantling of plant and machinery	Noise generation	₦	O, AN, T	-3	1	-3	Negligible Significance	-

* Type of Impact –O: One Time; N: Normal; AN: Abnormal; E: Emergency; Duration of Impact –T: Temporary; P: Long-Term/ Permanent, ₦ - Negative, ₱ -Positive.

4.7.1 Prediction of Noise Simulation

DhwaniPRO version 9.8.315 noise model is developed to undertake construction, industrial and traffic noise propagation. The model is used to predict the impact of noise on receptors from the noise generation source. It is also used to predict impact due to group noise sources in the industrial complex (multiple sound sources) and traffic. Various noise source and receptors were considered within 5 Km radius of study area. Based on the activity, the model was used to predict the noise levels to the nearest sensitive receptors without mitigation measures.

The source of noise during construction period will be due to movement of construction vehicles, noise from construction equipment like dozer, scrapers, concrete mixers, cranes, Pumps, compressors, and use of DG sets. Operation of these machineries will generate the noise level in the range of 78 -85 dB(A) near the source. Chronic exposure to high noise will lead to varying degree of damage to human hearing system, Sleep deprivation, annoyance, stress, poor concentration, mental fatigue and headache. The expected Noise levels from construction equipment/machineries are given below;

Table 4.21 Anticipated Noise Generating Source during Construction Phase

Sl. No	Source of Noise	Max Noise Levels dB(A)*
1	Bulldozer	85
2	Trucks	84
3	Excavator	85
4	concrete Mixer truck	85
5	Scrapers	84
6	Cranes	81
7	Compressors	78

*Source: Acoustical measurement in FHWA Roadway Construction Noise Model User's Guide. FHWA-HEP-05-054. January 2006.

The Anticipated Cumulative Noise during construction phase is expected to be **88 dB (A).**

Table 4.22 Source of Noise in the industry during Operational Phase

Sl. No.	Source of Noise	Max Noise Levels dB(A)
1	Boiler's	70-80
2	Stream turbine	85-90
3	Electrostatic Precipitator (ESP)	50-60
4	DG Sets	80-85
5	Movement of Tractor Trailers/Trucks	85-90

The Anticipated Cumulative Noise during operation phase is expected to be **93 dB (A).**



Fig 4.8 Isopleths showing noise levels during the operation phase without barrier

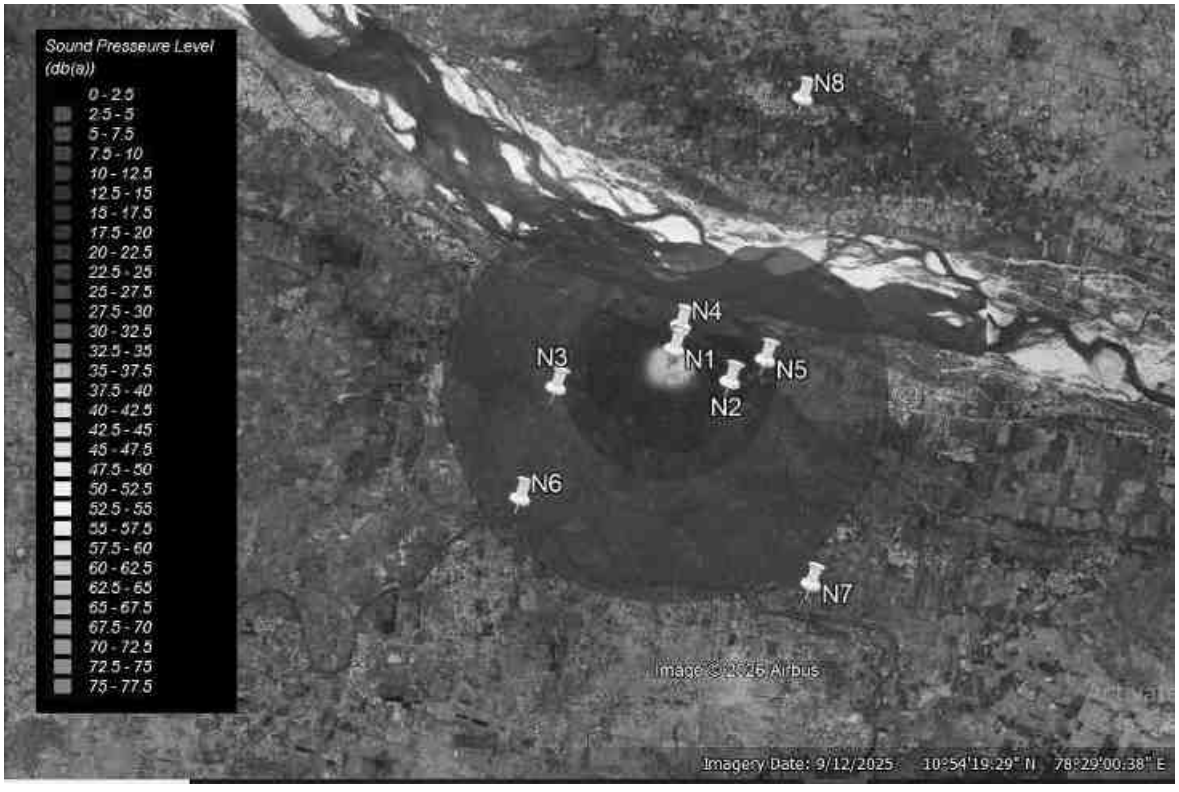


Fig 4.9 Isopleths showing noise levels during the operation phase with barrier

Table 4.23 Results of Noise Simulation by dhwaniPRO model- On sensitive receptors

Station code	Name of the Receptors	Baseline Results	Predicted Noise Levels with Barrier	Total noise value with barrier	Distance from Point Source in Km	CPCB Standards in dB(A) for Day time
N1	Project site	53.67	9	53.7	--	55
N2	Pettavaithalai	53.19	6.2	53.2	0.58 Km, SE	55
N3	Kuchipatti	52.51	0	52.5	1.48 Km, SW	55
N4	Marudur RF	48.56	14.9	48.6	0.14 Km, N	50
N5	Pettavaythalai Near NH 81 Road	63.06	2.8	63.1	1.02 Km, E	65
N6	Nadupatti	53.52	0	53.5	2.62 Km, SW	55
N7	Banglapudur	51.62	0	51.6	3.36 Km, SE	55
N8	Neyveli	50.56	0	50.6	3.34 Km, N	55

Based on the model results the noise levels during operational phase with respect to sensitive receptors is within the CPCB Standards with respect to nearest socially sensitive receptors.

4.8 Biological Environment

Table 4.24 Impact scoring and significance for Ecology & Biodiversity

Project Activity / Aspect	Impact	Impact on	Type of Impact*	Impact Scoring			Significance	Mitigation Measures
		EB		Severity (S)	Likelihood (L)	Score (S x L)		
Pre-construction phase								
Site Clearance	Loss of Vegetation at site	₦	O, P	-	-	-	Negligible Significance	Tree removal is not envisaged.
	Loss of top soil due to Excavation activities making the land not suitable for plantation during implementation phase	₦	O, P	-1	1	-1	Negligible Significance	The excavated soil properly maintained and utilized for greenbelt development
	Deposition of dust in surrounding vegetation	₦	A, T	-1	1	-1	Negligible Significance	Frequent water sprinkling activities

Project Activity / Aspect	Impact	Impact on	Type of Impact*	Impact Scoring			Significance	Mitigation Measures
		EB		Severity (S)	Likelihood (L)	Score (S x L)		
	affecting photosynthetic activity							
	Increased noise levels affecting faunal and avifaunal behavior activities at project site	₦	A, T	-1	1	-1	Negligible Significance	Barricading around construction site reduces the noise levels
Fencing	Habitat Fragmentation	₦	A, P	-	-	-	-	There is no impact as the project site presently vacant with 127 trees which will be retained however, landscape connectivity will improve upon implementation of greenbelt development plan.
	Loss of landscape connectivity	₦	A, P	-	-	-	-	
Construction Phase								
Vehicular Movement	Dust Deposition on surrounding flora affecting photosynthetic activity.	₦	A,T	-1	1	-1	Negligible Significance	Frequent watering (3 times a day) on roads should be carried out
	Noise generation affecting faunal and avifaunal behavior activities in the surrounding area including Marudur RF	₦	N,T	-1	1	-1	Negligible Significance	Vehicular movements restricted during the night time.
Construction activities	Noise generation affecting faunal and avifaunal behavior activities in the surrounding area including Marudur RF	₦	N,T	-2	2	-4	Negligible Significance	Construction activities restricted during night time
	Dust Deposition on surrounding flora affecting photosynthetic activity.	₦	A,T	-3	1	-3	Negligible Significance	Frequent watering (3 times a day) on roads should be carried out

Project Activity / Aspect	Impact	Impact on	Type of Impact*	Impact Scoring			Significance	Mitigation Measures
		EB		Severity (S)	Likelihood (L)	Score (S x L)		
Labour camps	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.	₦	A,T	-2	2	-4	Negligible Significance	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.
Operation Phase								
Vehicular Movement for transportation	Deterioration of air quality due to Vehicular exhausts affecting photosynthetic activity.	₦	A,T	-2	2	-4	Negligible Significance	Periodic maintenance of vehicles will be ensured and Vehicular movements are avoided in the night time
	Noise generation affecting faunal and avifaunal behavior in the surrounding area and in Marudur RF	₦	N,T	-2	5	-10	Moderately significant	Vehicular movements are avoided in the night time
Industrial activities	Noise generation affecting faunal and avifaunal behavior in the surrounding area and in Marudur RF	₦	N,T	-1	1	-1	Negligible Significance	Industrial activities are restricted to day time. 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.
	Air pollutants like SO_2, NOx, and particulate matter from distillery boilers and fermentation units can directly affect the vegetation in nearby	₦	N,T	-3	5	-15	Moderately significant	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

Project Activity / Aspect	Impact	Impact on	Type of Impact*	Impact Scoring			Significance	Mitigation Measures
		EB		Severity (S)	Likelihood (L)	Score (S x L)		
	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.							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.
Industrial activities	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.	₦	A,T	-3	5	-15	Moderately significant	Proper treatment of sewage/effluent generated from the industry through installation of 20 KLD STP, 300 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.
Operation of DG Sets	Noise generation affecting behavioral activities of smaller mammals and avifaunal species	₦	N,T	-1	1	-1	Negligible Significance	Installation of noise barricades.

Project Activity / Aspect	Impact	Impact on	Type of Impact*	Impact Scoring			Significance	Mitigation Measures
		EB		Severity (S)	Likelihood (L)	Score (S x L)		
Greenbelt development	Gives Good Aesthetics appearance	₱	N,P	+5	3	+15	Moderately significant	Improves Local Biodiversity
Decommissioning Phase								
Dismantling of Plants and Machineries	Emission of Dust causes Deterioration of air quality affecting plant physiology	₦	O,T	-1	1	-1	Negligible Significance	Installation of tall barricades and frequent water sprinkling will be carried out.
	Noise generation affecting behavioral activities of smaller mammals and avifaunal species	₦	A, T	-1	1	-1	Negligible Significance	Installation of tall barricades
Site clearance	Dust generation affecting photosynthetic activities	₦	O, P	-1	1	-1	Negligible Significance	Installation of tall barricades and frequent water sprinkling will be carried out.

* Type of Impact –O: One Time; N: Normal; AN: Abnormal; E: Emergency; Duration of Impact –T: Temporary; P: Long-Term/ Permanent, ₦ - Negative, ₱ -Positive.

4.9 Socio Economic

Table 4.25 Impact and Mitigation Measures for Social Environment

Project Activity / Aspect	Impact	Impact on	Type of Impact*	Impact Scoring			Significance	Mitigation Measures
		SE		Severity (S)	Likelihood (L)	Score (S x L)		
Construction Phase								
Local employment creation	The project is expected to generate employment for approximately 100 individuals.	₱	T	3	4	+12	Moderately Significant	Positive impact and priority will be given to locals.
Operation Phase								
Local employment creation	The project is expected to engage a total of 150 workers in permanent positions.	₱	P	4	5	+20	Highly Significant	Positive impact and priority will be given to locals.

Project Activity / Aspect	Impact	Impact on	Type of Impact*	Impact Scoring			Significance	Mitigation Measures
		SE		Severity (S)	Likelihood (L)	Score (S x L)		
Community development activities	An amount of ₹ 6.00 Cr (1% of the total capital investment of ₹ 600 Cr) has been earmarked for Corporate Environmental Responsibility (CER) activities. The CER initiatives have been identified based on the findings of the socio-economic survey conducted in the study area.	₱	T,P	4	4	+16	Highly Significant	Positive impact
Community Health	Residents living in close proximity to the industry may be exposed to elevated levels of noise, odour, air pollutants during plant operations. Additionally, dust deposition on surrounding agricultural lands could adversely affect crop health, potentially leading to reduced yields and diminished produce quality. Based on predicted dispersion patterns, the villages of Karuppampatti, Kuchipatti and Kulitalai are expected to experience partial impacts, which may affect both community health and agricultural productivity.	₦	A,T	-4	4	-16	Highly Significant	• Carry out frequent water sprinkling along haul roads, open yards, and material transfer points, particularly during dry and windy conditions, to reduce fugitive dust emissions. • Develop a multi-layered greenbelt around the project boundary using native tree and shrub species. The vegetation will act as a natural barrier, helping to trap dust and improve local air quality while enhancing the area's aesthetic value.
Traffic Congestion and Accidents	• Traffic congestion on rural roads due to high movement of trucks and bullock carts. • Slow-moving bullock carts obstruct traffic flow, causing delays and unsafe overtaking. • Increased accident risk involving trucks, two-wheelers, pedestrians, and unlit bullock carts, especially at night.	₦	A,T	-2	2	-4	Less Significant	Implementation of Traffic management plan and avoiding vehicular movements in the night time

Project Activity / Aspect	Impact	Impact on	Type of Impact*	Impact Scoring			Significance	Mitigation Measures
		SE		Severity (S)	Likelihood (L)	Score (S x L)		
	• Road infrastructure damage from overloaded trucks, creating potholes and unsafe driving conditions. • Pedestrian safety concerns, particularly for school children and elderly people on narrow village roads.							

* Type of Impact –O: One Time; N: Normal; AN: Abnormal; E: Emergency; Duration of Impact –T: Temporary; P: Long-Term/ Permanent, ₦ - Negative, ₱ -Positive.

Chapter
5

ANALYSIS OF ALTERNATIVES (TECHNOLOGY & SITE)

5.1 Analysis of Alternative Technology

In India to manufacture Ethanol there are three general process are there namely; Continuous process, Batch process & Fed Batch Process, out of which M/s. Greenergy Pure Ethanol Pvt. Ltd. has selected Fed Batch process for manufacturing of ethanol. Each process description and comparison for selecting the particular process is given below;

5.1.1 Fed - Batch Process

It is a modification of batch fermentation. In this method nutrition is added aseptically and the amount of liquid culture in the bioreactor increases as the culture is added systematically. It is a type of semi-open system. It yields a better result than batch fermentation. After consumption of early substrate continuous and constant nutrition is added.

A fed-batch process is partly an open system which keeps the nutrients from becoming a limiting factor through constant supply during cultivation. In batch system, the substrate is fed at the beginning of the process and nothing is added or taken during the fermentation process. This system may lead to the low ethanol yield and productivity, by substrate inhibition phenomena[17].

Table 5.1 Comparison of batch and continuous Fermentation process[18]

Particular	Fed Batch	Continuous
Fermentation	Batch fermentation is one type of industrial fermentation in which products are harvested at batch wise while stopping the process at the end of each batch.	Continuous fermentation is another type of industrial fermentation process in which fermentation is carried out for a longer period of time while adding nutrients at the beginning and in between the process and harvesting at regular intervals
Fresh media	In batch fermentation, in the beginnin, fresh medium is added.	In continuous fermentation, fresh media are added at regular intervals.
Process termination	In batch fermentation, when a batch is ready, process is terminated.	In continuous fermentation, process runs for a long time till harvesting is done several times.
Product harvesting	In batch fermentation, once the fermentation completes, product is harvested	In continuous fermentation, products and the biomass are harvesting at regular intervals

[17]https://www.infors-ht.com/en/blog/the-difference-between-batch-fed-batch-and-continuous-processes/
[18] IL&FS Technical EIA Guidance Manual for distilleries by Ecosmart Limited, Hyderabag and "Easy Biology Class" Easy biology class.

Particular	Fed Batch	Continuous
		several times while the process is going on.
Growth rate inside the fermenter	In batch fermentation, condition will not remain constant.	In continuous fermentation, conditions are kept at constant.
Use of nutrient in the fermenter	In batch fermentation, nutrients are used by the microorganisms in slower rate.	In continuous fermentation, nutrients are utilized rapidly by the microorganisms
Microbial growth	In batch fermentation, microbial growth shows in lag, log and stationary phases	In continuous fermentation, microbial growth exists in exponential phase all the time.
Environmental condition inside the fermentor	In batch fermentation, environmental conditions are less close to the natural environment	In continuous fermentation, conditions are closer to natural environment

The reasons for choosing Fed Batch Method are as follow;

- The fed-batch process offers a wide range of control strategies and is also suitable for highly specialized applications.
- Extends a culture's productive duration
- Can be used to switch genes on or off by changing substrate
- Can be manipulated for maximum productivity using different feeding strategies
- Fed-batch system helps to prevent substrate inhibition during fermentation
- This system leads the yeast growth in low substrate concentrations by consequently increasing their activity and ethanol productivity.
- It consumes less quantity of steam and operates efficiently.
- Yield and Quality of products are of high standard.
- For every batch fresh culture is to be added this will avoid bacterial contamination.
- Minimize the acid formation in fermentation media for getting good quality of alcohol and to increase the yield
- Simple to operate.
- The fed batch process consumes less water requirement as compared to other methods.

ADVANTAGES

- Controlling overall process is not much difficult (as in incineration) and hence economical also.
- Drying is a physical operation and involves only removing moisture from the substrate without any change in its properties.
- Usually do not create operational problems like chocking of tubes and corrosion of plant material.
- Low cost of investments in initial infrastructure of plant, machinery and equipment including technology cost as compared with incineration boiler
- Less operation and maintenance cost as compared with incineration boiler
- Steam from boiler (Biomass/Coal fired boiler) taken for MEE.

5.1.2 Production of ethanol by using grain as feed

5.1.2.1 Wet milling for the production of ethanol by using grain as feed

Ethanol can be produced by Wet milling and Dry milling process by using grain as feed.

Wet Milling: In each process, the corn is cleaned before it enters the mill. In the wet mill, milling and processing are more elaborate because the grain must be separated into its components. First, the corn is steeped in a solution of water and sulfur dioxide (SO2) to loosen the germ and hull fiber. This 30- to 40-hour extra soaking step requires additional tanks that contribute to the higher construction costs. Then the germ is removed from the kernel, and corn oil is extracted from the germ. The remaining germ meal is added to the hulls and fiber to form the corn gluten feed (CGF) stream. Gluten, a high-protein portion of the kernel, is also separated and becomes corn gluten meal (CGM), a high-value, high-protein (60 percent) animal feed. The corn oil, CGF, CGM,

In wet milling only the starch is fermented. The starch is then cooked, or liquefied, and an enzyme added to hydrolyze, or segment, the long starch chains.

Saccharification in a wet mill may take up to 48 hours, though it usually requires less time, depending on the amount of enzyme used. The co-products from wet milling are corn oil and the animal feeds corn gluten feed (CGF) and corn gluten meal (CGM).

Wet mills are more expensive to build, are more versatile in terms of the products they can produce, yield slightly less ethanol per bushel, and have more valuable co-products. The wet mill is more versatile, though, because the starch stream, being nearly pure, can be converted into other products (for instance, high-fructose corn syrup (HFCS)). Co-product output from the wet mill is also more valuable.

5.1.2.2 Dry milling for the production of ethanol by using grain as feed[19]

In the dry mill, the milling step consists of grinding the corn and adding water to form the mash and the entire mash is fermented. In dry milling, the mash, which still contains all the feed co-products, is cooked and an enzyme added.

In modern dry mills, saccharification has been combined with the fermentation step in a process called simultaneous saccharification and fermentation.

Dry milling production leaves, in addition to ethanol, distiller's dried grains with solubles (DDGS). The feed co-products must be concentrated in large evaporators and then dried. The CO2 may or may not be captured and sold.

The Reason for choosing the dry milling instead of wet milling is as follows;

- The dry milling process is less expansive compare to wet milling
- Wet milling is more versatile in terms of the products they can produce compared to dry milling.
- Dry mills cost less to build.
- Dry-milling plants have higher yields of ethanol compared to Wet Milling.

[19] New Technology in Ethanol production uploaded by C. Matthew Rendleman Hosein Shapouri on 21 November 2014

5.1.3 Utilization of DDGS as Cattle Feed

DDGS (Dry Distillery Grain Soluble) is a by-product of ethanol production from starch-rich grains such as maize and whole rice. DDGS has high nutrient feed value and suitable for the livestock industry. After starch extraction, the by-product contains protein, fiber, oil and essential amino acids which are suitable for livestock feed called Dried Distillers Grains with Soluble. DDGS will be in form of Dry product which will be used as a protein-rich cattle/animal feed.

5.1.4 Cogeneration Power Production

The by-product husk will be using for power generation. Thus demand for power externally will be nil and environmental friendly biomass based power will be utilised in the proposed industry. The power required for the proposed project will be supplied from the co-generation plant of capacity 9 MW during operational phase. The surplus power after supply to factory will be sold to the power grid. Suitable transformer, switchgear, switchyard, transmission lines and metering equipment will be provided.

5.2 Conservation of Resources

- Utilization of 100 % Husk from Grain based distillery unit as a fuel for boiler to generate steam.
- Recycle or reuse of wastewater generated from the distillation process such as spent lees, process condensate, washings etc., after treating in Condensate Polishing Unit (CPU).
- Utilization of rainwater to reduce the fresh water consumption in the industry.
- Boiler ash, fly ash and bottom ash will be completely reused in brick manufacturing.
- The generated yeast sludge from fermentation, CPU Sludge will be used as manure for greenbelt development.
- The DDGS will be used as a cattle feed.
- The Excavated earth will be stored separately and reused for greenbelt development.

5.3 Energy Conservation measures

Table 5.2 Calculations of the solar energy conservations

Total Power requirement	**:**	**3630**	**MW/A**
Wattage of solar panel	:	1000 W (1 kW)	
Peak sun hours	:	8	hrs
No of units	:	250	Nos
Energy output per day per unit considering Efficiency @85%	:	6800	W/day
	:	**6.8**	**kW/day**
Total energy output from 250 units for 330 days	**:**	**561**	**MW/A**
Energy savings	**:**	**15.45**	**%**

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.

5.4 Greenhouse gases reduction through plantation

Table 5.3 Estimation of GHG reduction through carbon sequestration of trees

Sl. No	Scientific name	Common	Family	Numbers	Carbon Sequestration capacity
1	*Grevillea robusta*	Savukku-maram	Protaceae	600	20.68
2	*Millingtonia hortensis*	Kat-malli	Bignoniaceae	600	23.41
3	*Tectona grandis*	Tekku	Verbenaceae	600	23.80
4	*Terminalia arjuna*	Marutu	Combertaceae	300	15.61
5	*Syzygium cumini*	Nagai	Myrtaceae	700	31.86
6	*Ailanthus excelsa*	Agal	Simaroubaceae	300	10.14
7	*Peltophorum pterocarpum*	Perung Kondrai	Fabaceae	500	16.91
8	*Azadirachta indica*	Veppai	Meliaceae	600	28.09
9	*Bauhinia racemosa*	Atti	Fabaceae	200	8.19
10	*Dalbergia sisoo*	Nukkam	Fabaceae	300	13.46
11	*Holoptelia intigrifolia*	Thappichan maram	Ulmaceae	400	13.53
12	*Madhuca longifolia*	Kat-illipi	Sapotacaea	300	14.44
13	*Mangifera indica*	Mango	Anacardiaceae	300	10.14
14	*Butea monosperma*	Murukkan-Maram	Fabaceae	300	10.14
15	*Cordia dichotoma*	Naruvili	Boraginaceae	200	5.98
16	*Delonix regia*	Kakkapoo maram	Fabaceae	100	3.38
17	*Terminalia bellerica*	Thandrikkai	Combertaceae	200	8.97
18	*Pithecellobium dulce*	Kodukkappuli	Fabaceae	200	8.58
19	*Limonia acidissima*	Vilam Parham	Rutaceae	200	6.76
20	*Aegle marmelos*	Vilvam	Rutaceae	100	5.07
21	*Alstonia scholaris*	Ezilai pillai	Apocynaceae	600	15.22
22	*Albizia amara*	Arappu	Fabaceae	98	4.59
23	*Albizia lebbeck*	Vagai	Fabaceae	100	3.58
24	*Annona squamosa*	Sitapalam	Annonaceae	500	16.91
25	*Araucaria columnaris*	Christmas tree	Araucariaceae	250	6.99
26	*Artocarpus heterophyllus*	Palaa	Moraceae	250	9.43
27	*Tabebuia aurea*	Silver Trumpet Tree	Bignoniaceae	550	19.31
28	*Tabebuia rosea*	Vasantha Rani	Bignoniaceae	550	20.39
29	*Cassia fistula*	Konrai	Fabaceae	500	26.66
30	*Polyalthia longifolia*	Asoothi	Annonaceae	600	21.85
31	*Ficus benghalensis*	Alamaram	Moraceae	100	3.19
32	*Ficus religiosa*	Arasu	Moraceae	100	2.86
33	*Tamarindus indica*	Puli	Fabaceae	50	3.22
34	*Zizyphus mauritiana*	Ilantai	Rhamnaceae	100	3.38
			Total	**11,348**	**436.73**

When the Existing greenbelt species attains the minimum girth of 30 Cm and minimum height of 5 m the total carbon sequestering capacity of individual species is given above and the total carbon sequestering capacity of tree species is 436.73 tonnes.

5.3 Analysis of Alternative Sites

M/s. Greenergy Pure Ethanol Pvt Ltd is proposed for “Establishment of 600 KLD Grain based Distillery Unit and 13 MW Captive Power Plant” at Kumaramangalam Village, Kulithalai Taluk, Karur District, Tamil Nadu, with a total area of 13.5 Ha.

The selected project site is ideal since of the following reasons;

- ❖ Availability of sufficient land for the project.
- ❖ Availability of water from Cauvery River, which is flowing at a distance of 600m in NE direction from the Project Site.
- ❖ Availability of skilled manpower from the region.
- ❖ Availability of Husk from the distillery unit after implementation of the project.
- ❖ The Project is surrounded by Agricultural Land & Helpful to the farmers for getting Employment opportunities in surrounding villages.
- ❖ The project site is approachable through an existing village road connecting MDR 1002 – 1.14 km (W), NH-81 (Kulithalai Bypass) – 0.13 km (N), and MDR 658 – 0.61 km €.
- ❖ There are no notified National Parks/Tiger Reserves/Elephant corridors within 10 Km. radius of the project site.

5.4 Compliance to Circular Economy Principles

Sl. No.	Attribute	Compliance
1	Reuse & Recycle of Resources	Reuse of husk as Boiler feed, DDGS as manure, CO_2 for dry ice and bottling and ash from boiler for manufacturing bricks.
2	Waste Minimization	• Sludge from CPU (100 TPD), Yeast sludge (94 TPD), STP sludge (1 kg/day) & ETP Sludge (15 kg/day) are used as Manure. • Boiler ash (36 TPD) is used in brick manufacturing unit. • 100% husk is used as Boiler feed. • DDGS (Dry Ethanol Grain Soluble) (300 TPD) will be in form of Dry product rich in protein content and will be sold as cattle/fish feed.
3	Water conservation	• The treated water from ETP& STP will be utilized for greenbelt development. • The treated water from CPU will be reused in process. • Rainwater (47,000 KLD) is stored in Rainwater harvesting ponds will be utilized for process for 19 days thereby minimizing the fresh water demand.
4	Energy Conservation	Solar Panels will be implemented 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.
5	Carbon Sequestration	Carbon dioxide (CO_2) is the primary greenhouse gas emitted through human activities. Additional Plantation of 11,348 Trees within the industry is expected to sequester 436.73 tons of CO_2.
6	Reduction of GHGs	• CO_2 released during fermentation will be reduced by CO_2 recovery Plant. • Carbon sequestration is one of the methods of reducing the amount of carbon dioxide which is a main contributor to GHG.
7	Society	Health, Education, Sanitation, Infrastructure, Skill development, Agriculture & job opportunities under CER activities.

Chapter
6

ENVIRONMENTAL MONITORING PROGRAM

6.1 Introduction

Monitoring of various environmental parameters during construction phase is important to assess the pollution load from the project and compare the same with that of baseline data collected during studies. To ensure effective implementation of the mitigation measures, it is essential to carryout environment monitoring program.

6.2 Parameters considered for monitoring

6.2.1 Ambient Air Quality Monitoring

The frequency of monitoring and parameters monitored is as per National Ambient Air Quality Standard, 2009. After the establishment of the project the regular monitoring will be carried out and Online Continuous Monitoring System will be installed at project site, which will be connected to TNPCB server.

Table 6.1 Ambient Air Quality Monitoring

Sl. No.	Parameters	No. of samples and Location	Frequency & Duration
Construction Phase			
1.	PM_{10}, $PM_{2.5}$, SO_2, NO_2, CO	04 locations • Main gate • Project Site–construction • Near DG set • Near Construction material storage area	Monthly, 24 Hours
2.	PM, SO_2& NO_2	2 No. DG Set	Monthly, 24 Hours
Operational Phase			
1	PM_{10}, $PM_{2.5}$, SO_2, NO_2, CO, NH_3, O_3, Pb, As, Ni, C_6H_6 & BaP	5 locations • Near Main Gate • Near Boiler House • Distillery Unit • DG sets • CO2 plant	Monthly, 24 Hours
Work Zone Air Quality Monitoring			
1	Particulate matter & VOC's	2 Locations • Near boiler house • Near Distillery area	Monthly, 24 Hours

6.2.2 Stack Monitoring

Stack monitoring will carried out in the proposed industry monthly to evaluate the performance of pollution control Equipment's such as ESPs.

If the emissions are exceed the standard limits then the respective in charger in the plant will take necessary corrective action immediately. The stack monitoring details are given in the below table.

Table 6.2 Stack Details

Sl. No.	Parameters to be monitored	Stack attached to	Frequency & Duration of monitoring
1	PM, SO_2 & NO_2	• DG set of 2 x 750 KVA – Stack height 30 m. • 100 TPH boiler – 70 m Stack height	Monthly, 24 Hours

6.2.3 Fugitive Emissions

Fugitive emissions will be monitored at a distance of about 5-10 meters from the source of emissions; the frequency of fugitive monitoring is once in monthly as per guidelines.

6.2.4 OCEMS for Stacks

Online Continuous Emission Monitoring System (OCEMS) will be installed to stack and further it will be connected TNPCB server for monitoring of emissions. The industry will maintain the limits under prescribed standards as per TNPCB/CPCB.

6.2.5 Ambient Noise Levels Monitoring

The ambient Noise levels monitoring will be carried such as near main gate, near co-generation plant, near D.G room, near parking bay and loading and unloading areas.

The noise generating equipment's/ machineries in the plant will be maintained in good condition to reduce noise levels and smooth operation. The Ambient noise levels monitoring will be conducted once in a month for 24 hours (6 am to 10 pm (Day time) & 10 pm to 6 am (Night time)) as per Noise Pollution (Regulation & Control) Rules, 2016.

6.2.6 Effluent/Sewage Quality

- ❖ 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.
- ❖ 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.

- ❖ The project is designed with ZLD concept and there will be no discharge of effluent from project to outside and also on land.

6.2.7 Ground Water Quality

The Ground water will be analysed once in monthly basis to ensure that the ground water contamination from the project activities and also ground water sampling and analysis will be done at agricultural lands adjacent to the project site which will be compared with IS :10500:2012 second revision Drinking Water Standards.

6.2.8 Solid & Hazardous Waste Generation & Utilization

The generated solid wastes from the project such as Yeast sludge from fermentation section & CPU sludge from operation of CPU will be mixed and used as manure for greenbelt development, Fly ash / boiler ash generated from the operation of boiler will be used for manufacturing bricks at inhouse brick manufacturing unit.

The domestic solid wastes will segregated into organic and inorganic solid waste and handed over to local municipal body. The Hazardous wastes such as used oil will be used as lubricants within the plant and oil soaked cotton waste is very little and it will used for light up the boiler.

Hence there is no discharge wastes from the industry on environment & also the industry will take upmost care in the handling and management of the solid & Hazardous wastes. TCPL test will be conducted to the wastes periodically.

- ❖ TCPL Test for waste

TCLP or Toxicity Characteristic Leaching Procedure is a chemical analysis process used to determine whether there are hazardous elements present in a waste. The test involves a simulation of leaching through a landfill and can provide a rating that can prove if the waste is dangerous to the environment or not. This rating can dictate the waste management methodology that the company adopts to dispose of the waste afterwards.

6.2.9 Green Belt Development

The management is responsible for the development and maintenance of greenbelt in the industry. The management will make Yearly schedules for plantation with specific number plantation to be carried out as per the MoEF&CC guidelines. The management will employ one person for plants growth & regular maintenance of Greenbelt in the industry. The photographs of the plantations will be maintained timely as a record.

6.2.10 Occupational Health & Safety

- ❖ M/s. Greenergy Pure Ethanol Pvt. Ltd. will implement first aid room with bed & emergency First Aid Kit at the industry for emergencies and the industry will tie – up with local hospital for any emergencies.
- ❖ Medical examination will be carried out to all the workers at regular intervals (once in six months) to check the health conditions.

- ❖ The management has EHS Department & this department will be responsible for safety of the plant.
- ❖ As per EHS policy of the industry safety practices will be implemented before executing of any work following risk assessment guidelines, HIRAC & HAZOP. Review of housekeeping for maintaining clean and good environment in the plant.

6.2.11 Accidents Monitoring

The management of M/s. GPEPL will adopt standards operating procedures, respective departments to take of workers' health & safety and sudden occupational accidents happens in the plant to workers.

The safety department will immediately respond to the workers and they will take necessary actions to save the workers' health. The workers will report immediately for Occupational injuries, disease, Dangerous incidents occurs, Environmental accidents & spillages to the management/Safety department.

6.3 Monitoring of Pollution Control Devices

6.3.1 Performance of environment pollution control equipment

The environment control equipment is designed to mitigate the emissions and discharge of pollutants on receiving bodies. It is also intended that the equipment operates continuously, performs as per the design so that the emission levels are maintained at the lowest levels. Although, there are no reported incidents of any disaster leading to loss of life or property due to the failure of the pollution control equipment, it is necessary to evaluate the impact on the emissions and discharges in case of faulty of these critical equipment's so that suitable action can be taken in time. The following section evaluates the worst-case scenario in terms of the impact on the environment in case of failure of the pollution control systems.

6.3.2 Electrostatic precipitators

The electrostatic precipitator works on the principle of percentage reduction and is very sensitive to variation in the inlet dust loading. The ESP in the proposed project is designed to meet a stringent norm of 35 mg/Nm^3 in normal conditions and 35 mg/Nm^3 in case of failure of one field. The possible scenario of failures is:

a. Power failure to the ID fan of the ESP

b. Failure of one electrical field

The ESP will be proposed to 100 TPH boiler to stack height of 70 m to control the emissions and spillage of fly ash generated from the operation of boilers and are integral with the plant operations. In case of power failure, the complete plant will come to a standstill condition. Since the ESP is designed to meet 35 mg/Nm^3 even in case of failure of a field, the emissions will be minimal. The summary of possible ESP scenario and their impact is given in the Table 6.3 below.

Table 6.3 Summary of Possible APC failure scenarios

Sl No	Failure Scenario	Impact	Max Duration (minutes)	Action Plan	Impact on environment		
					Within the shop level	Within plant premises	Beyond Outside plant premises
1	Failure of ESPs	Dust pollution and health impact	1	SOP for smooth shut down	0	√	√
2	Power Failure	Fugitive Emission during shut down	15	SOP for smooth shut down	√	0	0

6.4 Environmental Monitoring Programme

Table 6.4 Environmental Monitoring Program for Construction phase (one year)

Sl. No.	Particulars of the Monitoring	No. and place of monitoring	Monitoring frequency	Parameters for Monitoring	Monthly Budget (₹)
1	Ambient Air Quality Monitoring– 24Hrs	04 locations • Main gate • Project Site–construction • Near DG set • Near Construction material storage area	Monthly once	PM_{10}, $PM_{2.5}$, SO_2,NO_2	4 x4,000/- =16,000 /-
2	Ambient Noise Levels Monitoring–24hrs	03 locations • Near main gate, • Construction area • Labor camp	Monthly once	Leq Day dB(A) Leq Night dB(A)	3 x 1,500/- = 4,500 /-
3	Surface Water Quality	03 locations • Vadivu Canal • Nala within project site • Nala Adjacent to the project site	Monthly once	pH, Colour, Odour, Turbidity, Total Dissolved Solids, Total Hardness, Ca, Mg, SO_4, F, NO_3, DO, BOD, COD, Cl, Fe, Coliform Count.	3 x2,500/- =7,500/-
4	Soil quality	04 locations • Project site–North	Monthly once	Color, pH, Conductivity, Moisture Content, Calcium, magnesium, Nitrogen,	4 x1,750/- =7,000 /-

Sl. No.	Particulars of the Monitoring	No. and place of monitoring	Monitoring frequency	Parameters for Monitoring	Monthly Budget (₹)
		• Project site–West • Project site–South • Project site–East		Phosphorous, Potassium, Organic Matter, Sulphate, Chloride.	
				Total per month	**35,000 /-**
				Total per annum	**4,20,000/-**

Table 6.5 Monitoring Schedule for Environmental Parameters during operation phase

Sl. No.	Particulars	Monitoring frequency	Duration/type of monitoring	Important parameters for monitoring	Monthly Budget*(Rs.)
I	**Air Quality**				
1	Ambient Air Quality Monitoring within premises – 5 locations • Near Main Gate • Near Boiler House • Distillery Unit • DG sets • CO_2 plant	Once in month	24 hours	PM_{10}, $PM_{2.5}$, SO_2, NO_2, CO, NH_3, O_3, Pb, As, Ni, C_6H_6 & BaP	5 x 4000/- =20,000/-
2	Work Zone Air Quality Monitoring – 2 locations • Near boiler house • Near Distillery area	Once in month	24 hours	SO_2, CO, NOx, O_3, TVOC, PM	2 x 2,000/- = 4,000/-
3	Stack Monitoring 3 locations • 2x 750 KVA– 15m AGL • 100 TPH Boiler – 70 m AGL	Once in a month	Grab	PM	3 x 2,500/- =7,500 /-
4	Fugitive Emissions – 2 locations • Rice husk Yard Area • Coal Storage Yard	Once in a month	Grab	PM	2 x 1,250/- =2,500/-
II	**Noise**				
	Ambient Noise level monitoring –	Once in a Month	24 Hours		

Sl. No.	Particulars	Monitoring frequency	Duration/type of monitoring	Important parameters for monitoring	Monthly Budget*(Rs.)
1	4 locations • Near Main Gate/Boundary • Distillery Plant • Near D.G Sets • Loading and Unloading areas			Noise levels in dB(A) both during day& night time.	4 x1,500/- =6,000 /-
III	**Water Quality**				
1	Surface Water Quality 04 locations • River Cauvery • Vadivu Canal • Nala within project site • Nala Adjacent to the project site	Once in a season	Grab	pH, Colour, Odour, Turbidity, Total Dissolved Solids, Total Hardness, Ca, Mg, SO_4, F, NO_3, DO, BOD, COD, Cl, Fe, Coliform Count.	4 x2,500/- =10,000/-
2	ETP inlet &outlet	Once in a month	Composite	BOD, COD, pH, TSS, Oil and Grease	2x2,000/- = 4,000 /-
3	STP inlet &outlet	Once in a month	Composite		2x2,000/- = 4,000/-
4	CPU inlet & outlet	Once in a month	Composite		2x2,000/- = 4,000/-
IV	**Soil Quality**				
1	Soil quality analysis- 2 locations Near CPU area Near solid waste management area	Once in season	Grab	pH, Colour, Conductivity, Moisture Content, Ca, Cl, Bulk Density, Mg, N, Organic Matter, P_2O_5, K, SO_4, B, Texture, Zn, Mn, Cu, Salinity, Sodium, Organic Carbon, SAR	2 x1,500/- = 3,000/-
				Total	**65,000/-**
				Total per annum	**7,80,000/-**

6.5 Compliance report Submissions

Six monthly compliance reports will be submitted to MoEF&CC for the EC conditions. Further, monthly environmental monitoring reports will be submitted to Regional Office, TNPCB and Environment Statement will be submitted every year to Regional Office, TNPSCB.

Chapter
7

ADDITIONAL STUDIES - PUBLIC CONSULTATION AND RISK ASSESSMENT

7.1 Public Consultation

During the study period and while collection of socio-economic baseline data, public consultations were made informally. The EIA Notifications, 2006 and its amendments, mandates formal public consultation to be conducted at site. As per the procedure, Draft EIA report along with the Executive Summary in Tamil and English will be submitted to TNPCB for conducting Environmental public hearing. Further, TNPCB in consultation with district Administration for Karur District finalize the date and venue of public hearing and issue the paper notification 30 days in advance in local and regional newspapers. As per the procedure laid down in the EIA Notification, 2006 the public hearing will be conducted at site and proceedings will be issued along with video recordings

7.1.1 Corporate Environmental Responsibility (CER) activities

As per the MoEF&CC Notification vide No. F.No.22 -65/2017-IA.III dated on 1.05.2018, the total CER cost of the project is 6 Crores @ 1 % of the total investment of the project (600 Crores). The action plan and details of activities to be carried out under CER activities are given below.

Table 7.1 Action Plan for implementation of activities as per MoEF & CC OM Dt: 30.09.2020

Sl. No.	Topic	Work to be done	Units	Total Cost (in lakhs)	FY 25-26 (in lakhs)	FY 26 - 27 (in lakhs)	FY 27 - 28 (in lakhs)	Completion Date
1	Health	Upgradation of Govt. Hospital	2 Units	40	-	2 Units at Pettavaithalai and Kulithalai		Dec-28
						20	20	
		Community health/awareness programmes, such as polio camps,	2 Units	30	3 Units at Kuchipatti, Melariyampatti and Kelariyampatti villages			Dec-28
					10	10	10	

Sl. No.	Topic	Work to be done	Units	Total Cost (in lakhs)	FY 25-26 (in lakhs)	FY 26 - 27 (in lakhs)	FY 27 - 28 (in lakhs)	Completion Date
		eye camps, and blood donation camps						
2	Education	Construction of Government School with toilets, compound wall, smart classes and playground	3 Units	90	3 Units at Kuchipatti, Melariyampatti and Kelariyampatti villages			Dec-28
					30	30	30	
		Providing teaching aids/books, Furniture, Computers, library, Sports materials to Govt. Schools	5 Units	40	-	2 Units at Pettavaithalai & Kulithalai		
						20	20	
		Improvement of play ground in Govt. School	2 Units	30	-	2 Units at Pettavaithalai & Kulithalai		
						15	15	
3	Support for farmers	Construction of Farm Ponds & livestock	15 Units	45	5 Units at Kuchipatti village	5 Units at Melariyampatti village	5 Units at Kelariyampatti village	Dec-28
					15	15	15	
5	Provision for Drinking water supply	Provision for drinking water facilities	3 Units	30	1 Unit at Kuchipatti village	1 Unit at Melariyampatti village	1 Unit at Kelariyampatti village	Dec-28
					10	10	10	
8	Road facility	Construction of Concrete internal roads	3 Units	90	1 Unit at Kuchipatti village	1 Unit at Melariyampatti village	1 Unit at Kelariyampatti village	Dec-28
					30	30	30	

Sl. No.	Topic	Work to be done	Units	Total Cost (in lakhs)	FY 25-26 (in lakhs)	FY 26 - 27 (in lakhs)	FY 27 - 28 (in lakhs)	Completion Date
10	Solar lighting system	Provision of Solar lights and Solar Panel	60 number	60	20 Nos. at Kuchipatti village	20 Nos. at Melariyampatti village	20 Nos.at Kelariyampatti village	Dec-28
					20	20	20	
11	Skill development activities	Providing Infrastructural Support through Women Income Generating Programmes through the formation of SHGs to various economic activities like Cutting & Tailoring, Nursery, Stitching / embroidery, Pickle & Sauces making, Soft Toys Courses will be carried out for Women Empowerment in the area.	3 Units	70	1 Unit at Kuchipatti village	1 Unit at Melariyampatti village	1 Unit at Kelariyampatti village	Dec-28
					25	25	20	
		Establishment of Skill Development Centre for providing short duration programs for unemployed youth in the field of electrician, plumber, motor mechanic	3 Units	45	1 Unit at Kuchipatti village	1 Unit at Melariyampatti village	1 Unit at Kelariyampatti village	Dec-28
					15	15	15	
		Skill Development training programmes for students by providing proper guidance, infrastructure, opportunities, and encouragement	3 Units	30	1 Unit at Kuchipatti village	1 Unit at Melariyampatti village	1 Unit at Kelariyampatti village	Dec-28
					10	10	10	
Total cost in Lakhs				**600**	**165**	**220**	**215**	

7.2 Risk Assessment and Hazard Management

Hazard identification is the critical step in risk assessment having primary significance. The major hazards commonly seen in the industries are toxic gas release, fire and explosion. Following areas in the industries can be hazardous and may cause an accident, if the risks are not properly managed

- storage and handling of hazardous chemicals,
- manufacturing processes and related operations in the plant

Flammable material will form pool on leakage and this pool can sustain a pool fire. In case of toxic material, the vapors evaporated from pool disperse in downstream direction and may cause problem for people in process units / buildings and human settlements near to the industries.

Risk screening of M/s Greenergy Pure Ethanol Private Limited (GPEPL) proposed to establish 600 KLD Ethanol bio-refinery plant in Village – Kumaramangalam, Kulithalai Taluk, Karur District, Tamil Nadu was undertaken through data/information provided by the unit.

The major area of concern from risk and hazard from the proposed biorefinery project is involved in storage of Ethanol. Ethanol falls under flammable category of high intensity. The probable fire hazard in the plant is in the area of ethanol storage and handling. In case of leaks, invisible vapors spread easily and are set on fire by nearest ignition sources. Therefore, it is important to control or eliminate all potential ignition sources in areas that might lead to ignition of vapor. All forms and types of energy can be considered a potential ignition source. The management shall exert close control over the storage and handling of the ethanol. This is best done by proper training of personnel, confinement of the liquids and associated vapors, ventilation to prevent vapor build up, control of potential ignition sources and protection of the area with an extinguishing system.

7.3 Likely failure scenarios of ethanol storage tank

Few likely failure scenarios have been selected after critical appraisal of raw materials and storage inventories. Failure scenarios selected are as given below;

Table 7.2 Different Failure Scenarios

Sl.No.	Raw material/chemical	Hazardous characteristics	Failure scenario
1	Ethanol	Extremely flammable	Spillage, vapor cloud

7.4 Maximum Credible Accident / Catastrophic Failure and Its Mitigation measure

The Consequence Analysis has been done for selected scenarios by ALOHA software (Areal Locations of Hazardous Atmosphere: Version 5.4.7) of EPA.

7.5 Consequences Analysis

Ethanol storage tank (3300KL capacity) is considered for the consequence analysis considering its hazardous nature.

7.6 Possible Accident Scenario

Different possible ways of occurrence of any accidents due to storage/usage of ethanol are mentioned below;

- **Scenario-A:** Toxic threat zone from release of chemical due to leakage and form evaporating puddle (Not burning)
- **Scenario-B:** Flammable area of vapor cloud caused from the chemical due to leakage and form burning puddle (Pool fire)
- **Scenario-C:** Thermal radiation from burning puddle (Pool fire)
- **Scenario-D:** Thermal radiation from burning puddle (pool fire) caused from two storage tanks – cumulative risk
- **Scenario-E:** Threat zone from failure of pipeline of ethanol storage tank
- **Scenario-F:** Blast area of Vapor Cloud Explosion

Atmospheric conditions assumed at the time of accidents are mentioned in below table

Particulars	Details
Average wind speed	2.6 metre/second
Ground Roughness	Open
Cloud Cover	5 tenth
Air Temperature	30° C
Stability Class	C
Relative Humidity	65%

7.7 Maximum Credible Accident scenarios for the hazardous chemical

Summary of different credible accident scenarios for prediction of risk are given below;

Sl. No	Hazardous Chemicals	SCENARIO A Toxic Threat Zone, m			*SCENARIO B Flammable area of vapor cloud pool fire, m		*SCENARIO C Thermal Radiation from Pool fire, m		
		Red	Orange	Yellow	Red	Yellow	Red	Orange	Yellow
1	Ethanol	NA	22	30	20	30	23	30	42
*THERMAL RADIATION INTENSITY Red: 10 kW/sq.m. (Potentially lethal within 60 sec) Orange: 5.0 kW/sq. m. (2nd Degree burn within 60 sec) Yellow: 2.0 kW/sq. m. (Pain within 60 sec)									
Sl. No	**Hazardous Chemicals**	**SCENARIO D Cumulative risk from all four storage tanks**			***SCENARIO E Leak or rupture in pipeline of size 6 inch dia.**				
		Thermal radiation from pool fire (m)			**Flammable area of vapor cloud pool fire (m)**		**Thermal radiation from pool fire (m)**		
		Red	Orange	Yellow	Red	Yellow	Red	Orange	Yellow
1	Ethanol	31	40	58	<10	121	33	43	62
*THERMAL RADIATION INTENSITY									

Red: 10 kW/sq.m. (Potentially lethal within 60 sec)
Orange: 5.0 kW/sq. m. (2nd Degree burn within 60 sec)
Yellow: 2.0 kW/sq. m. (Pain within 60 sec)

SCENARIO-A: RELEASE OF CHEMICAL DUE TO LEAKAGE AND FORM EVAPORATING PUDDLE (NOT BURNING)

a) Source Strength

When chemical will escape from storage unit as a liquid and form an evaporating puddle, source strength will be as given below

Source Strength (Evaporating Puddle)

Details of Source		**Model Outcome Particular**	
Name of Chemical	Ethanol	Maximum Avg. Sustained Release Rate (kg/min)	62.2
Chemical storage	SS Tank	Release Duration (min)	60 min
Storage Capacity (m^3)	3300	Total Amount Released (kg)	3289
Chemical Mass Stored (tons)	2278	Evaporating Puddle Diameter (m)	40
Opening length	6 inches		
Opening Width	2 inches		
Opening from bottom of tank (m)	4		
Internal Temperature (°C)	30		

b) Toxic threat zone

Model output of the Toxic threat zone is given in below table

Toxic Threat Zone	**LOC, ppm**	**Model Outcome**	
		Distance(meters)	**Remarks**
Orange [ERPG - 2]	3300	22	The concentration of 3300ppm will be present with in the distance of 22m, which it is believed that nearly all individuals could be exposed for up to 1 hour without experiencing or developing irreversible or other serious health effects or symptoms which could impair an individual's ability to take protective action
Yellow [ERPG - 1]	1800	30	
Threat zone was not drawn because effects of near-field patchiness make dispersion predictions less reliable for short distances.			

SCENARIO-B: RELEASE OF CHEMICAL DUE TO LEAKAGE AND FORM BURNING PUDDLE (POOL FIRE)

a) Source Strength

When chemical will escape from storage unit as a liquid and form a burning puddle, source strength will be as given below

Details of Source		**Model Outcome Particular**	
Name of Chemical	Ethanol	Maximum Flame Length (m)	12
Chemical storage	SS Tank	Burn Duration (min)	60 min
Storage Capacity (m^3)	3300	Maximum Burn Rate (kg/min)	357
Chemical Mass Stored (tons)	2278	Total Amount Burned (kg)	20,631
Opening length	6 inches	Burning Puddle Diameter (m)	16.6
Opening Width	2 inches		
Opening from bottom of tank (m)	4		
Internal Temperature (°C)	30		

b) Threat zone of thermal radiation from pool fire

Model output of the threat zone of thermal radiation from pool fire is given below

Flammable threat zone	**LOC, kW/sq. m.**	**Model Outcome**	
		Distance (m)	**Remarks**
Red (Potentially Lethal within 60 sec.)	10	23	Maximum distance of thermal radiation @10kW/sq.m from pool fire is 23m, where the personnel expose to this radiation at 10 kW/sq.m within the distance of 23 m could be potential lethal.
Orange (2nd Degree burn within 60 sec.)	5	30	
Yellow (Pain within 60 sec.)	2	42	



SCENARIO-C: RELEASE OF CHEMICAL DUE TO LEAKAGE AND FORM VAPOR CLOUD

a) Source Strength

When chemical will escape from storage unit as a liquid and form a vapor cloud, source strength will be as given below

Details of Source		**Model Outcome Particular**	
Name of Chemical	Ethanol	Release Duration (hour)	1
Chemical storage	SS Tank	Max Average Sustained Release Rate: (kg/min)	62.2
Storage Capacity (m^3)	3300	Total Amount released (kg)	3289
Chemical Mass Stored (tons)	2278	Puddle spread to a diameter (m)	40
Opening length	6 inches		
Opening Width	2 inches		
Opening from bottom of tank (m)	4		
Internal Temperature (°C)	30		

b) Flammable Area of Vapor cloud

Model output of the threat zone from flammable area of vapor cloud is given below

Flammable threat zone	LOC, ppm	Model Outcome
		Distance (m)
Red (Potentially Lethal within 60 sec.)	19800	20
Yellow (Pain within 60 sec.)	3300	30
Threat zone was not drawn because effects of near-field patchiness make dispersion predictions less reliable for short distances		

SCENARIO-D: RELEASE OF CHEMICAL DUE FROM ALL THE FOUR STORAGE TANKS (CUMULATIVE RISK) AND FORM BURNING PUDDLE (POOL FIRE)

a) Source Strength

When chemical will escape from storage unit as a liquid and form a burning puddle, source strength will be as given below

Details of Source		**Model Outcome Particular**	
Name of Chemical	Ethanol	Maximum Flame Length (m)	16
Chemical storage	SS Tank	Burn Duration (min)	60 min
Storage Capacity (m^3)	13200	Maximum Burn Rate (kg/min)	714
Chemical Mass Stored (tons)	9123	Total Amount Burned (kg)	41,263
Opening length	6 inches	Burning Puddle Diameter (m)	23
Opening Width	2 inches		
Opening from bottom of tank (m)	4		
Internal Temperature (°C)	30		

b) Threat zone of thermal radiation from pool fire

Model output of the threat zone of thermal radiation from pool fire is given below

Flammable threat zone	LOC, kW/sq. m.	Model Outcome	
		Distance (m)	Remarks
Red (Potentially Lethal within 60 sec.)	10	31	Maximum distance of thermal radiation @10kW/sq.m from pool fire is 31m, where the personnel expose to this radiation at 10 kW/sq.m within the distance of 31 m could be potential lethal.
Orange (2nd Degree burn within 60 sec.)	5	40	
Yellow (Pain within 60 sec.)	2	58	



SCENARIO-E: MAXIMUM CREDIBLE ACCIDENT SCENARIO FOR THE ESCAPE OF ETHANOL STORAGE DUE TO LEAK OR RUPTURE IN PIPELINE OF SIZE 6 INCH DIA

a) Source Strength

When chemical will escape from storage unit as a liquid and form a burning puddle, source strength will be as given below

Details of Source		**Model Outcome Particular**	
Name of Chemical	Ethanol	Maximum Flame Length (m)	17
Chemical storage	SS Tank	Burn Duration (min)	60 min
Storage Capacity (m^3)	3300	Maximum Burn Rate (kg/min)	841
Chemical Mass Stored (tons)	2278	Total Amount Burned (kg)	48612
Circular opening dia	6 inches	Burning Puddle Diameter (m)	25
Opening from bottom of tank (m)	4		
Internal Temperature (°C)	30		

b) Threat zone of thermal radiation from pool fire

Model output of the threat zone of thermal radiation from pool fire is given below

Flammable threat zone	LOC, kW/sq. m.	Model Outcome	
		Distance (m)	remarks
Red (Potentially Lethal within 60 sec.)	10	33	Maximum distance of thermal radiation @10kW/sq.m from pool fire is 33m, where the personnel expose to this radiation at 10 kW/sq.m within the distance of 33 m could be potential lethal.
Orange (2nd Degree burn within 60 sec.)	5	43	
Yellow (Pain within 60 sec.)	2	62	



b) Flammable Area of Vapor cloud

Model output of the threat zone from flammable area of vapor cloud is given below

Flammable threat zone	LOC, ppm	Model Outcome
		Distance (m)
Red (Potentially Lethal within 60 sec.)	19800	LOC never exceeded
Yellow (Pain within 60 sec.)	3300	121



7.8 Consequential impacts

The impact zones for the hazards identified in the proposed project are shown below;

Toxic Hazards

Maximum distance of toxic threat zone observed upto 30m distance in ERPG 1 category for storing the chemical Ethanol. The concentration of this chemical exposed to the personnel working under this area will be in the range of 1800ppm, is the maximum airborne concentration below which nearly all individuals could be exposed for up to 1 hour without experiencing more than mild, transient adverse health effects or without perceiving a clearly defined objectionable odor. Upto the distance of 22m, level of air borne concentration will be below 3300ppm falling in ERPG 2 category, where the person could be exposed for up to 1 hour without experiencing or developing irreversible or other serious health effects or symptoms which could impair an individual's ability to take protective action. However, the extent of threat zone at both ERPG 1 and ERPG 2 level is confined within the boundary limit of the proposed plant.

Thermal radiation Hazards

Risk of thermal radiation from pool fire is within the distance of 23m at the level of 10kW/sq.m which is confined within the plant premise, where the personnel expose to this radiation within the distance of 23m could be potential lethal. Maximum distance of thermal radiation is observed at 42m at the level of concentration 2 kW/sq.m from the pool fire of ethanol storage tank causing the personnel exposed could experience notable discomfort, irritation, or certain a symptomatic

non sensory effects. The vapor cloud modeling carried out for the ethanol storage tank found the yellow threat zone is extending to a maximum distance of 30m in downwind direction which is confined within the plant boundary.

The thermal radiation from pool fire caused from the failure of all the four storage tanks (cumulative risk) is within the distance of 31m at the level of 10kW/sq.m which is confined within the plant premise, where the personnel expose to this radiation within the distance of 31m could be potential lethal. However, failure of all the shells of the storage tanks is a very rare phenomenon, which may occur due to earthquake or due to intentional external impact. The plant is located in the Karur district, which has no history of any earthquake. The district falls under seismic zone II, i.e., low risk zone.

Risk of thermal radiation from pool fire caused from the escape of ethanol from pipeline (6" dia) leakage is within the distance of 33m at the level of 10kW/sq.m which is confined within the plant premise, where the personnel expose to this radiation within the distance of 33m could be potential lethal. The vapor cloud modeling carried out for the escape of ethanol from pipeline (6" dia) found only the yellow threat zone is extending to a maximum distance of 121m in downwind direction at 10% of LEL. The Level of Concern (LOC) never exceeded the threshold value for red threat zone.

Strict adherence to PESO guidelines, safety measures and preventive maintenance procedures in the storage tank area shall be followed to avoid the accidental release of ethanol from storage tank. The industry shall adopt necessary safety measures in handling of Ethanol by inspecting the storage tanks at regular intervals for any corrosion, weak joints and the isolation valves required for its safe operation. The tank farm shall be manned by 24/7. Additionally, the emergency control centre shall be made located at the distance of 200m from the distillery tank storage area. To respond to spill incidents, the ERT team's maximum travel time to this location shall be not more than 10 minutes. Also, to handle the spill incidents, as a part of emergency respond procedure, the fire hydrant system shall be installed encompassing the plant, distillery unit, material handling system, storage area and allied buildings.

Overall from the analysis, it is shown that impact at the range of 10kW/sq.m, 5 kW/sq.m and 2 kW/sq.m is within the plant boundary. Only the employees present in the vicinity of the ethanol storage tank will be exposed to heat radiation at the range of 10kW/sq.m in case of a fire, it is reasonable to assume the protection by clothing.

Strict adherence to PESO guidelines, safety measures and preventive maintenance procedures in the storage tank area has to be followed to avoid the accidental release of ethanol from storage tank. The industry shall adopt necessary safety measures in handling of Ethanol by inspecting the storage tanks at regular intervals for any corrosion, weak joints and the isolation valves required for its safe operation.

7.9 Mitigation measures to prevent fire hazard in Ethanol storage tank

- The ethanol storage tanks shall be located in dyked enclosure, sufficient to contain the complete content of the tank in the dyke in case of any emergency
- The dyke wall at minimum height of 1 metre and not exceeding 2 metre shall be built around the bulk storage tank to ensure the spillages are confined. The floor of the dyke shall be of cement concrete construction and sloping towards inner periphery of the dyke enclosure to prevent reverse flow.
- Flame proof type equipment and lighting shall be provided in storage tank area.
- Flame arrestors shall be provided in pressure release equipment provided to the tank.
- Ethanol tanks shall be equipped with fusible links to isolate the piping in the event of fire.
- Trained and experience operator will be employed
- Tanks of proper material of construction as recommended by Chief control of explosives shall be selected. The tank shall be designed, fabricated, tested and inspected as per IS: 803 standard.
- Hydrant system covering the entire plant including all important auxiliaries and buildings is proposed. The system will be complete with piping, valves instrumentation, hoses, nozzles and hydrants, valves etc. Foam based media (alcohol-resistant) shall be preferred for fighting system.
- NFPA label (hazard identification) capacity and content shall be displayed on storage tank.
- No dry grass is allowed to grow inside the fenced area
- Flexible SS hose will be used for road tanker unloading purpose and other temporary connection.
- Good standard of housekeeping will be maintained
- To protect against electrostatic build-up, all metal (or other conducting) components will be adequately earthened before any liquid flow begins. All fixed equipment used to handle flammable liquids will be electrically bonded together.
- Static earthing provision will be made for road tanker as well as storage tank.
- Adequate training and knowledge on the properties of flammable liquids present on site will be provided in addition to its safe handling and the emergency procedures in the event of an incident.
- Access will be provided in two areas for easy access to emergency respond
- Instrument like gas detectors with an alarm function will be provided to alert the personnel in case of any increase in the flammable vapour concentration above the specified limit
- Where the potential exists for exposure above the recommended permissible limit, approved respirator with a full face piece operated in a pressure demand will be used.
- Tank location will be away from the all hot areas, process area and other movement area.
- The entry to tank location shall be strictly restricted and only trained and authorized persons are allowed to enter the storage area. Entire tanks storage facility shall be fenced by minimum 2000mm height fencing.

7.10 Fire explosion and Toxicity index

The Dow Fire and Explosion Index (AICE, 1998) guideline has been used to determine the fire & explosion hazard numerically. The computation of fire and explosion index is based on the material factor. This is a measure of the intrinsic rate of potential energy release from fire explosion of most hazardous material or mixture of materials present in significant quantity, whether it is raw material, intermediate, product, solvent etc., by combustion or chemical reaction.

The Dow index has been calculated for the Ethanol storing in quantity i.e. 13200 KL (3300 KL X 4 nos). The F&EI calculation is calculated by using both general and specific process hazards to the materials involved. The formula used is:

FEI (Fire Explosion Index) = MF x (1 + GPH) x (1 + SPH)

MF – material factor; GPH – General Process hazard and SPH – Specific process hazard.

Table 7.3 Degree of Hazard for F&EI

F & EI index range	Degrees of hazard
1-60	Light
61-96	Moderate
97-127	Intermediate
128-158	Heavy
159 and above	Severe

7.10.1 Fire and Explosion index for Ethanol storage tank

The degree of potential hazard is calculated based on DOW's index

Equipment	Ethanol – 13200 ltrs (3300 KL X 4 nos)		
Material storage	SS Tank		
Nh	2		
Nf	3		
Ni	0		
Material factor	16		
		Penalty factor range	Penalty factor
1.General Process	Base Factor	1.00	1.00
1A	Exothermic Chemical Reaction	0.00 to 1.25	0
1B	Endothermic Processes	0.0 to 0.40	0
1C	Material handling and transfer	0.0 to 0.8	0.3
1D	Enclosed or Indoor Process Units	0.0 to 0.90	0.5
1E	Access	0.00 to 0.35	0.1
1F	Drainage and Spill Control	0.0 to 0.50	0.0
General Process Hazard Factor (F1)			1.9

2.Special Process Hazard	Base Factor		1.00
2A	Toxic material(s) handled	0.2 to 0.8	0.4
2B	Process or storage operates at vaccum (< 500 mm Hg)	0.50	0.5
2C	Operation in or near flammable range	0.00 to 0.80	0.3
2D	Dust Explosion	0.00 to 2.00	0
2E	Pressure penalty		
	Operating pressure Kpa g	101.3	0.001
	Relief pressure Kpa g	150	0.001
	Final penalty		0.00
2F	Low temperature	0.20 to 0.30	0.3
2G	Combustible and Flammable materials in Process, Quantity		
2G1	1. Liquids or gases in process (kg)	0	-
2G2	2. Liquids or gases in storage (kg)	10335.6	-
	Penalty		0.0
2G3	Combustible Solids in Storage, Dust in Process		0.0
2H	Corrosion & Erosion	0.10 to 0.75	0.0
2I	Leakage - Joints & Packing	0.10 to 1.50	0.1
2J	Use of Fired Equipment		
	Distance in meters (for Material >F.P.)	200	
	Distance in meters (for Material >B.P.)	200	
	Penalty		0.4
2K	Hot oil heat exchange system	0.15 to 1.15	0.0
2L	Rotating Equipment	0.50	0.0
Special Process Hazard Factor (F2)			3.01
Process Unit Hazard Factor (F3 = F1 x F2)			5.72
Fire and Explosion index (F&EI = F3 x M.F.)			91.52
Degree of Hazard			Moderate

7.10.2 Toxicity Index

The Toxicity Index (TI) is calculated from Th and Ts and the addition of hazard factors of Fire & Explosion Index (F&EI). The TI is found from the following formula:

$$TI = \frac{Th + Ts\ (1 + GPH + SPH)}{100}$$

Th – toxicity number derived from NFPA and Ts is the penalty factor derived from the threshold Limit Values (TLV).

By comparing the indices of FEI and Toxicity index, the unit under consideration is classified into one of the following three categories

TI index range	Degrees of hazard
1-5	Light
6 - 9	Moderate
>10	High

7.10.3 Fire Explosion and Toxicity Index for Ethanol Storage Facility

Fire explosion and Toxicity Index values obtained for Ethanol storage tank combined through FETI are given below:

Quantity	Material factor	Fire Explosion Index	Toxicity Index
13200 KL (3300 KL X 4 nos)	16	91.52	4.20

Degree of Hazard based on Fire explosion and Toxicity indices computed for the ethanol storage tank is categorized as below:

7.10.4 Degree of hazard

Storage tank	Fire Explosion Index	Toxicity Index
Ethanol	Moderate	Light

The estimated values of Dow F&EI from the calculations seen that the storage will have Dow index of 96 indicating moderate hazard potential and Toxicity index of 4.21 indicating light hazard potential. Based on the categorization of degree of hazard, the following minimum preventive and protective measures are recommended.

- The dyke wall shall be built around the bulk storage tank to ensure the spillages are confined. The floor of the dyke shall be of cement concrete construction and sloping towards sump pit.
- Flame proof type equipment and lighting shall be provided in storage tank area.
- Flame arrestors shall be provided in pressure release equipment provided to the tank.
- Tanks of proper material of construction as recommended by Chief control of explosives shall be selected. The tank shall be designed, fabricated, tested and inspected as per IS: 803 standard.
- To protect against electrostatic build-up, all metal (or other conducting) components will be adequately earthened before any liquid flow begins. All fixed equipment used to handle flammable liquids will be electrically bonded together and adequately earthened.
- Static earthing provision will be made for road tanker as well as storage tank.
- Instrument like hydrocarbon detectors with an alarm function will be provided to alert the personnel in case of any increase in the flammable vapour concentration above the specified limit

- The entry to tank location shall be strictly restricted and only trained and authorized persons are allowed to enter the storage area. Entire tanks storage facility shall be fenced by minimum 2000m m height fencing.

7.11 Hazard identification in the manufacturing process

Hazard Identification and Risk assessment (HIRA) tool is used to assess their potential for an unplanned consequence of events, which can lead to an accident while storage and handling of hazardous chemicals.

Risk is rated based on likelihood of various consequences. A risk matrix is prepared based on findings of likelihood of an event with various consequences involved is given below:

Risk Rating = Probability x Severity			**Consequence / Severity**				
			Insignificant / Negligible	**Minor/ marginal**	**Moderate**	**Major/ critical**	**Severe/ catastrophic**
			1	**2**	**3**	**4**	**5**
Likelihood/probability	Highly Unlikely	1	1	2	3	4	5
	Unlikely	2	2	4	6	8	10
	possible	3	3	6	9	12	15
	Likely	4	4	8	12	16	20
	certain	5	5	10	15	20	25

Based on calculated risk rating, level of a risk and emergency can be defined in the event of accident. Risk rating from 1 – 4 indicates low; 5 – 12 indicates medium; 15 – 25 indicates high risk category.

Hazard Identification and Risk Analysis is carried out for the various steps involved in M/s. Greenergy Pure Ethanol Pvt Ltd is shown in below ;

Table 7.4 Hazard Identification and Risk Analysis

Activity	Hazard description	Initiating event (likelihood)	Hazard	Risk category	Control measures
Vehicle movements for raw material transportation	Hit hazard by vehicles	3	4	M	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	3	3	M	Provision of machine guarding, trained person deployment
Conveyor operation	Injury to body parts due to contact with moving conveyer belt	3	3	M	Safety guard shall be provided on all moving and rotating parts of the conveyor
	Fall from the height during work on conveyer belt,	3	3	M	Safety belt, deploying trained person
Using silos for grain storage	Explosion in grain handling silos	3	4	M	Providing explosion proof Dust collection system, bonding and grounding of equipments, Practicing good housekeeping
	Damage to Respiratory organs due to dust generation	2	3	M	Dust protection respirator mask, Dust collection and exhaust system
Operation of hammer mill	Injury to body parts due to rotating parts of the machine	3	3	M	Provision of machine guarding, trained person deployment
Sieving machine operation	Noise generation due to shaker	4	3	M	Use of ear muffs
	Respiratory organs damage due to exposure to dust	4	3	M	Use of mask

Activity	Hazard description	Initiating event (likelihood)	Hazard	Risk category	Control measures
	Injury to body parts due to nip points	3	3	M	Machine guarding, trained operator deployment
	Fire hazard due to presence of combustible dust	3	4	M	Provision of dust exhaust machine and ensuring good housekeeping practice
Storage of flours in bins	Damage to respiratory organs due to dust generation	4	3	M	Use of personnel protection equipments like facemask.
Mixing starch in large tanks	Fall hazard in tanks	3	3	M	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	3	5	H	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 Exposure to enzymes	4	3	M	Respiratory mask will be provided.
	Damage to skin due to use if corrosive chemicals	3	3	M	Safety gloves, goggles, aprons will be used
Fermentation process in fermenter vessel	Explosion due to Exothermic reactions	3	4	M	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

Activity	Hazard description	Initiating event (likelihood)	Hazard	Risk category	Control measures
Distillation area	Fire hazard due to Uncontrolled ignition source, Column failure, Pipeline failure,	3	4	M	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	3	4	M	Pressure relief valve shall be provided
	Fire hazard from the release of ethanol vapor from the lines	3	4	M	Preventive maintenance of the pipe line shall be carried out. Leak detection measures shall be carried out periodically.
Handling of receiver tanks to collect distilled spirit	Spillage of distilled spirit	3	3	M	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	3	5	H	Proper earthing and bonding system shall be done to prevent static electricity build-up. Flameproof electric equipments 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	3	4	M	Level/Temperature Indicators are checked and logged regularly for proper functioning. Pressure gauges shall calibrated periodically,

Activity	Hazard description	Initiating event (likelihood)	Hazard	Risk category	Control measures
					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	3	3	M	Periodic inspection of pipeline for leak test, use of personal protection equipments
	Exposure to warm temperature in boiler area	4	2	M	Heat resistant gloves and protective suits shall be used.
	Fall from height areas stairs and elevated platforms	3	4	M	Handrail provision shall be made to all the stairs and elevated platforms.
	Exposure to noise level	2	4	M	Ear muff shall be provided to the boiler operators
Generator and turbine operation	High noise level	4	3	M	Use of ear plugs
	Fire in transformer yard	3	4	M	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	3	3	M	Trained person deployment and electrical safety PPE's will be provided
	Slip , trip and from the height during routine work, maintenance on switch yard	3	3	M	Safety belt, safety harness will be provided followed by training

Activity	Hazard description	Initiating event (likelihood)	Hazard	Risk category	Control measures
Use of chemicals in quality testing laboratories and ETP lab	Irritant in case of inhalation Corrosive to skin and eyes on contact	3	3	M	Splash proof goggles, aprons, organic vapor respirator, safety shoes and gloves shall be provided

7.12 HAZOP studies

Following HAZOP study is carried out for operation of boiler

Part	OPERATION OF BOILER					
Process	**Steam generation**					
Guideword	**Deviation**	**Causes**	**Safeguards**	**Consequences**	**Scenario**	**Recommendation**
Node 1 - Flow of water						
Less	Low Flow	leakages in inlet pipe	Periodic inspection of inlet pipe	Damage the boiler shell due to excessive temperature, emission of black smoke	1	Monitoring of pressure guage connected to the boiler shell, Preventive maintenance will be done to check the pump functioning and valves.
		Pump failure (mechanical, Electrical etc	Periodic inspection in the pump		2	
		Semi-open valve	Periodic inspection in the Valve, trained person deployment		3	
More	High flow	Failure in pressure switch of water supply automatic system	Annual calibration and periodic maintenance is ensured.	Affects the quality of steam required for the process	4	Water level interlocking system is provided to the connected inlet pump.

Part	**OPERATION OF BOILER**					
Process	**Steam generation**					
Guideword	**Deviation**	**Causes**	**Safeguards**	**Consequences**	**Scenario**	**Recommendation**
		Failure in the boiler's indicator level (float)	Annual calibration and periodic inspection		5	Preventive maintenance plan of pressure switches and water pump will be implemented and followed. Calibration plan will be incorporated in the monitoring schedule
		Electric failure in the pump since there is failure in the pressure switch and level	Periodic inspection and corrective maintenance		6	
Node 2 -Pressure						
More	High Pressure	Excess of fuel supply required for boiler operation	Boiler and pressure vessel's manometer, Pressure guage with interlocking system to cut off the fuel combustion process	Risk of Explosion	7	Implementing a preventive maintenance plan to check the effective function of pressure gauges by conducting the calibration and interlocking system, Presence of Qualified boilers operators
		Malfunction of pressure relief valve during the boiler operation	Visual Inspection, Periodic calibration of pressure gauges.		8	
Low	Low Pressure	Obstruction or leakage in the fuel pipe causing inadequate heat supply	Boiler and pressure vessel's manometer	Affects the steam generation process.	9	Periodic inspection of pipelines and periodic cleaning of fuel inlet duct. Presence of qualified

Part	**OPERATION OF BOILER**					
Process	**Steam generation**					
Guideword	**Deviation**	**Causes**	**Safeguards**	**Consequences**	**Scenario**	**Recommendation**
		scale deposits inside boiler tubes and in shell	Feed water shall be checked for the desired quality required for boiler operation	Overheating of the tube and eventual failure.	10	boilers operators. Shift wise monitoring of quality of water supplied to boiler shell

From this HAZOP study the following recommendations are suggested to reduce the consequences of the deviations.

- Preventive maintenance will be done to check the pump functioning and valves
- Qualified boiler operators shall be deployed to run the operation
- Flow meters, level indicators should be calibrated periodically.
- Flow sensor shall be provided to avoid the overflow and spillages.
- Periodic maintenance of flow sensor and pressure gauges shall be done
- Shift wise monitoring of quality of water supplied to boiler shell shall be done.

7.13 Onsite and Offsite Disaster Preparedness and Emergency Management Plan

Natural disasters

The entire district falls under the category Zone II as per the Seismic Zoning Map of India contained in IS 1893:2002 Fifth Revision. This zone is referred as Low Damage Risk Zone as per Building Material and Technology Promotion Council (BMPTC), which has no history of earthquakes above 5 magnitude in its vicinity.

River Cauvery is flowing near the project site at an aerial distance of 0.55km from the project site. In the past, during northeast monsoon, heavy water flow in Cauvery and its tributaries, has affected the low lying areas of the river banks. Considering the distances from the river and the elevation of the project site at 104m above mean sea level, there are no chances of flood occurrence in the proposed project site.

Based on the detailed study of characteristics of chemicals used and the process carried out in the plant, fire hazard from storage of ethanol is predicted.

7.13.1 Fire hazard from storage of ethanol

Storage of Ethanol (3300KL X 4 nos) is a major area of concern from risk and hazard in the plant. Ethanol falls under flammable category of high intensity. In case of leaks, invisible vapors spread easily and are set on fire by ignition sources resulting in the damage to life and property of surrounding areas of storage tanks.

7.13.2 Mitigation measures to prevent fire hazard in ethanol storage tanks

- All the tanks shall be placed within the area surrounded by dyke wall, constructed as per standard design and construction norms. The dyke wall shall be built around the bulk storage tank to ensure the spillages are confined. Volume capacity within the dyke wall will be more than the storage tank inside the dyke wall.
- Flame proof type equipments and lighting shall be provided in storage tank area.
- Trained and experience operator shall be employed
- Tanks of proper material of construction as recommended by Chief control of explosives shall be selected.
- Hydrant system covering the entire plant including all important auxiliaries and buildings is proposed. The system will be complete with piping, valves instrumentation, hoses, nozzles and hydrants, valves etc.
- NFPA label (hazard identification) capacity and content will be displayed on storage tank.
- No dry grass are allowed to grow inside the fenced area
- Flexible SS hose will be used for road tanker unloading purpose and other temporary connection.
- Good standard of housekeeping will be maintained
- To protect against electrostatic build-up, all metal (or other conducting) components will be adequately earthed before any liquid flow begins. All fixed equipment used to handle flammable liquids will be electrically bonded together and adequately earthed.
- Static earthing provision will be made for road tanker as well as storage tank.

- Adequate training and knowledge on the properties of flammable liquids present on site will be provided in addition to its safe handling and the emergency procedures in the event of an incident.
- Access will be provided in two areas for easy access to emergency respond
- Instrument like gas detectors with an alarm function will be provided to alert the personnel in case of any increase in the flammable vapour concentration above the specified limit
- Tank location will be away from the all hot areas, process area and other movement area.

7.13.3 Electrocutions and Fire hazard from Electric room

All electrical equipment's shall be provided with proper earthing. Earthed electrode will be periodically tested and maintained.

- Emergency lighting shall be made available at all critical locations including the operator's room to carry out safe shut down of the plant
- Easy accessibility of fire fighting facilities such as fire water pumps and fire alarm stations shall be considered.
- All electrical equipment's will be maintained free from carbon dust, oil deposits, and grease.
- Use of approved insulated tools shall be preferred.
- Temperature sensitive alarm and protective relays to make alert and disconnect equipment before overheating will be considered
- Danger from excess current due to overload or short circuit will be prevented by providing fuses, circuit breakers, thermal protection

7.14 Disaster or Emergency Management Plan

The organizational arrangement of the emergency operations requires that all personnel of a given shift are familiarized before handing over with their duties in case of an accident, fire or explosion. All firefighting and emergency response tools and other equipment need to be prepared in advance to ensure the timely response to the situation.

To get the maximum advantage of the emergency organization, we have defined the activities of various officers / workers in the following manner.

7.14.1 About declaration of emergency and distribution of duties

When the incident is observed by any person in the plant, shift in-charge will be informed immediately to take the control of the situation. If the situation go beyond the control, then the shift in-charge is responsible to inform the crisis management responsible persons which consists of Incident Controller (IC), Site Controller (SC) and supporting teams such as fire fighters, first aiders, rescue team, electricians etc. In case of minor incident, the shift-incharge can continue with the operations.

Essential workers will be called at the site of event to follow the emergency action as per the guidance of Incident Controller to deal with the emergency.

Considering the extent of emergency the incident controller will take the charge of site Controller till the site controller arrives. The declarer of emergency after ascertaining the gravity of the situation and analyzing the requirement for announcement of emergency will give directions to blow the siren. Operating the electrical siren waxing & waning, for two minutes continuously will mean the declaration of emergency at the site. The incident controller will order for shutdown and evacuation of workers and staffs from affected area. Incident controller will inform all Key Personnel and all outside agency (Fire brigade, Police, and Factory Inspector) for help. He will inform security and fire officers and State Fire Services. IC will ensure that all non-essential workers/staff are evacuated to assembly point and areas searched for casualties. IC will report all significant development to Communication Officer. He will preserve evidence of emergency into the cause of emergency

7.14.2 Responsibility of Site Controller (SC)

The General Manager/occupier of the Plant should act as Site Controller. His duties are to:-

- Maintain a continuous review of possible development and assess in consultation with work incident controller and other Key Personnel.
- Liaison with Police, Fire Service, Medical Services, Factory Inspectorate and other Govt. Agencies.
- Direct and control rehabilitation of affected area after emergency.
- Ensure that evidence is preserved for enquiries to be conducted by statutory authorities.
- Declare emergency (if it has not done so already)
- Inform mutual aid factories and seek their help if they have the required facilities.
- Call Incident Controller and ask him to proceed with the work of controlling the incident.
- Inform fire brigade if help is required.
- Ask the security to account for personnel.
- Arrange to get ambulances to send injured workers to hospitals, in case of casualty.
- Nominate a person to give information to the media public, and members of families of the affected.
- Take the help of outside experts, if necessary.
- Inform the Chief Inspector of factories and Pollution Control Board.
- Remain in touch with the Incident Controller and keep the public informed about the status of emergency.
- Give the all clear signal after the emergency has come under complete control.
- Arrange to send the evacuated workers and public back to their homes and assist them to
- resettle.
- If services have been cut off, inform the concerned services to restart after the emergency is controlled.

7.14.3 Responsibility of Incident controller (IC)

- IC is the next responsible officer after the site Controller. Generally, the plant manager is designated as Work Incident Controller. In case of emergency he will rush to the place of occurrence and take overall charge and report to the site Controller by personnel

communication system like cell phones or walky-talky and inform about the magnitude of emergency.

- IC will assess the situation and considering the magnitude of emergency. He will give direction to stop all operations within the affected area.
- IC will take the charge of Main Controller till the Main Controller arrives.
- IC will order for shutdown and evacuation of workers and staffs from affected area.
- IC will inform all Key Personnel and all outside agency for help. He will inform security and fire officers and State Fire Services.
- IC will ensure that all non-essential workers/staff are evacuated to assembly point and areas searched for casualties.
- IC will report all significant development to Communication Officer. Moreover he will advise to preserve evidence of emergency into the cause of emergency. In case, the incident controller is not available on site, the other area Heads of our factory/supervisor-in charge will act as incident controller to handle the emergency

7.14.4 Responsibilities Dy. Incident controller

The Head of EHS dept/Engineering dept person will act as Dy. Incident controller and having the following roles and responsibilities

- On hearing the emergency siren/alarm he will proceed to the control centre and communicate to Work Incident Controller.
- Collecting information from the emergency affected area and send correct message to Incident controller for declaration of emergency.
- Maintain a log book of incident.
- Contact all essential internal departments (fire fighters, first aiders, rescue team)
- Collecting meteorological condition from local meteorological Department.
- Communicating all information as directed by Incident Controller

7.14.5 Other Key Personnel and their duties

Communication Officer.

- The security head will act as communication officer on hearing the emergency siren/alarm he will proceed to the control centre and communicate to Work Incident Controller.
- He will collect information from the emergency affected area and send correct message to work main controller for declaration of emergency.
- He will maintain a log book of incident. He will contact all essential departments.
- He will declare the emergency by activating the siren upon the intimation from Site controller/Incident controller/Dy.Incident controller.
- He should take their attendance so as to assess the missing persons during emergency.
- Ensure that records of the calls received / sent are maintained.

Fire fighters

- The Security or Fire fighters will be responsible for the fire fighting. On hearing the emergency alarm/siren, they will reach the incident area. Immediately after arrival to the

emergency area, the fire fighters will act upon the advice from the Dy. Incident controller/Incident controller

- He will inform to the Work Incident Controller about the situation and requirement of outside help like State Fire Service and other mutual aid members.
- The security will control the visitors and the vehicle entry.
- Will take up the full responsibility of providing medical assistance during emergency
- Will arrange for outside medical help if required.

Role of engineering department

- Shut down of plant and making it safe.
- Attending emergency engineering works such as isolating equipment, materials, process, safe transfer of substance, urgent repair or replacement, electrical work etc.
- Provision of emergency power, water, lighting, instruments, equipment, materials etc.
- Ensure the pumps running and water level maintained in the fire water tank.
- Ensure continuous electric supply to emergency equipment.

First aiders

- The first aid team shall call their team members to the affected area.
- The team shall bring all the first aid materials to the emergency sport.
- The injured persons shall be given first aid and if required they must be shifted to nearest hospital for further course of treatment.
- Should help the rescue team for safe operation of the situation

7.14.6 Safe assembly point

Dedicated safe assembly area shall be provided inside the plant.

All the employees will be made familiar with the emergency facilities and the plant layout will depicted near to the entrance of the industry. The role of each employee is explained to assist the key personnel in case of emergencies. The emergency preparedness is ensured all round the clock.

The plant workers, contract workers and visitors should assemble in assembly point after hearing the emergency siren and assist for head count in the safe assembly point

7.14.7 Emergency Control Centre

The Emergency security room shall be located at the main gate. Telephone and other facilities required with required documents will be displayed in emergency control center for ready reference. Site Controller will operate from Emergency Control Centre. Equipment's present in Emergency Control Centre is given below

- Site plan, elevation plan and plant layout showing storage of hazardous materials
- Emergency preparedness plan
- List of Fire and Rescue Squad Members
- List Fire Extinguisher
- Sirens
- Torch lights

- Walk talky
- first aid kit
- Stretchers
- Ladders
- Respirators, gum boots, safety helmets
- Toxic gas measuring equipment's
- Safety data sheet
- List of important telephone numbers
- Residential address of all the employees
- Mega phone
- Self-contained breathing apparatus

7.14.8 Fire-fighting arrangements

Adequate firefighting equipment's, personal protective equipment's and respiratory equipment's shall be made available to handle the emergency situations. Fire hydrant system network shall be provided covering all the areas of the plant with the dedicated water storage tank of adequate capacity. They are regularly inspected for their working conditions. Essential workers and other personnel are regularly trained to use both fire-fighting and personal protective equipment's. Nearest fire station is located at Musiri, at the distance of 15.2KM from the project site. Fire tender vehicle shall procured and maintained inside the plant to handle the fire emergencies.

7.14.9 About medical arrangements

Occupation health centre shall be provided with bed facility to handle the medical emergency. One qualified Medical Officer shall be made available at dispensary in the plant for fixed hours. First Aid boxes shall be provided in time office and at prominent locations in the plant. These boxes shall be equipped with all required first aid facilities like bandages, antidotes, antiseptics to deal with minor injuries and help in major exposure, until the victim is transferred to the occupational health centre or until the doctor arrives.

7.14.10 About transport and evacuation arrangements

After declaring the emergency depending on the situation-

(1) Non-essential persons like contract labors and labors from the adjacent areas will be evacuated to pre-determined safe assembly points or outside the Factory depending on the severity.

(2) People residing in close distances, if they are required to be evacuated, they will be evacuated and transported to safe places/shelters.

(3) Personnel required for medical care, they will be transported to hospital by ambulance van or vehicles available.

(4) SC along with respective key personnel will arrange for such activities including rescue and transportation or injured persons, casualties, etc.

(6) Transportation arrangements will be made for people/essential workers/experts/key personnel to bring them to site.

7.14.11 About use of external authorities

- Musiri Fire Service Station / Fire Tender is located within 15.2 kms distance from the plant
- Experts on safety, health, pollution control special technologist will be contacted and their skills will be utilized. Communication will have to be carried out in normal time also and a list of such personnel should be kept ready with phone numbers etc. so that at the time of emergency they can be available easily.
- Police, District Collector, Factory Inspector, Pollution Control Board Experts, Health and Medical Officer etc. will be contacted for help.
- Help of institution, Social Organizations, Voluntary organizations etc. will be taken as per need. A list of such organization will be kept ready with telephones. Communication in normal times will help speedy response.

7.14.12 Arrangement for accounting of personnel

When some emergency strikes, everyone on the site has to be accounted

(1) A list of the names & addresses of all employees, home addresses, their dept. of work will be maintained. A copy of this list will be kept in ECC.

(2) Records of the employees present on a particular day or shift shall be collected from security department.

(3) Knowledge of Supervisors, colleagues of the employees, etc. will help to take account of presence.

(4) Accounting will be done by the respective shift in-charges or designated persons

(5) Record of arrival and departure of all visitors has to be maintained by the security dept. together with the names of personal/officers of the plant they have come to meet.

(6) In the immediately affected area, the IC/SC etc. will arrange for a search to locate any injured persons or casualties. Other workers/colleagues also will give information regarding the same. Further search may be made by Police/Local Authority/Local Fire Brigade Officer will also arrange for such search.

7.15 Off Site Emergency Plan

The Off-site emergency plan is made based on events, which could affect people and Environment outside the premises. The off-site plan is largely a matter of ensuring the co-ordination of proposed services and their readiness as far as possible, for the specific hazards and problems, which may arise in as incident. Briefly two main purposes of the plan are as under:

- To provide the local district authorities, police, fire brigade, doctors etc. the basic information of risk and environmental impact assessment and to appraise them of the consequences and the protection / prevention measures and control plans and to seek their help to communicate with the public in case of major emergency.

- To assist the district authorities for preparing the off-site emergency plan for the district or particular area.

In M/s Greenergy Pure Ethanol Pvt. Ltd., the major area of concern from risk and hazard is involved in storage of Ethanol (3300KL X 4 Nos) . Ethanol falls under flammable category of high intensity. The results of the consequence analysis for toxic air exposure, thermal radiation from pool fire and flammable area of vapor cloud shows that the extent of threat zones are confined within the plant boundary. However, M/s Greenergy Pure Ethanol Pvt. Ltd. shall plan to take adequate resources and measures to handle the off site emergency scenarios in co-ordination with local district authorities.

7.15.1 Organizational set up

Incident controller will manage the activities for off-site emergency plan under the guidance of Site controller who will be contact with emergency co-ordination officer of the area. Fire fighters, security team, production staff and key personnel (first aiders) will work in co-ordination with outside available help under the instruction of site main controller

A	Site controller	Managing Director
B	Incident controller	Plant Manager

7.15.2 Communication facilities - List of important telephones

Telephone Operator at reception room will operate the communication system by referring the emergency contact details which are displayed nearby.

7.15.3 Specialized emergency equipment – Firefighting equipment

For the purpose of handling emergency, the area near security office is identified as Emergency Control Centre. The ECC shall be kept fully equipped with equipment and resources to handle the emergency situations.

7.15.4 Specialized Knowledge - Trained people

Supervisor of EHS, Engineering and production dept are used to make available during an emergency. Besides these, the industry will also maintain the availability of trained fire fighters and first aiders.

7.16 Occupational health

7.16.1 Plan and fund allocation

The Safety Plan will be prepared to ensure health and safety at work place. Also, the management will ensure to allot enough funds to ensure the occupational health & safety to all categories of workers.

Table 7.5 Details on plan fund allocation to ensure to occupational health and safety

Sl.No	Plans	Frequency in year	Cost in Rs.	Total Cost. in Rs
1	Medical examinations periodically as per the Factories act 1948	Twice	250000	5,00,000
2	Personnel Protection equipment (safety shoes, goggles, respirators, SCBA maintenance, Aprons etc.)	Annually	4,50,000	4,50,000
3	Capacity building training to personnel on emergency preparedness, fire-fighting measures, use of PPE's, and first aid	Annually	200,000	2,00,000
4	Visual signage and posters display to create awareness on health and safety topics	Annually	50,000	50,000
5	Environment monitoring in the workplace (Indoor air monitoring, Particulate matter, VOC's)	Quarterly	50,000	2,00,000
6	Maintenance of Occupational Health Centre and First aid kits	Annually	2,00,000	2,00,000
			Total cost (INR)/year	**16,00,000**

7.16.2 Details of exposure specific health status evaluation of worker.

M/s Greenergy Pure Ethanol Pvt. Ltd shall plan to check and evaluate the exposure specific health status evaluation of workers. Workers are checked for physical fitness with special reference to the possible health hazards likely to be present, where he/she is being expected to work before being employed for that purpose. Complete medical examinations including PFT, Urine and Blood examination, Liver Function tests, chest X-ray, Audiometry, Spirometry Vision testing, ECG, etc. is carried out. However, the parameters and frequency of such examinations are decided in consultation with Factory Medical Officer and Industrial Hygienists and the details of the same are maintained in Record. The medical examination to determine the exposure specific health status evaluation will be carried out as per the following schedule;

- Before employment, to ascertain physical fitness of the person.
- During employment, once in a period of 12 months, to ascertain physical fitness of the person.
- Once in a period of 6 months, to ascertain the health status of all the workers in respect of occupational health hazards to which they are exposed in particular to the job engaged in the process area.

7.16.3 Details of existing Occupational & Safety Hazards

Chemicals, catalysts, enzymes, intermediates, products, and other substances involved in distillery unit may be hazardous to workers. If appropriate preventive measures are not implemented, exposure can occur during handling, storing, processing, and transporting activities. Examples of hazardous substances likely to be found at distillery unit is as follows

Table 7.6 List of occupational hazards and its impacts

Sl.No	Occupational Hazards	Occupational Health Impacts
1	Use of Enzymes	Exposure to enzyme is associated with increased risk for respiratory illnesses, allergic reactions in those who are more sensitized to its effects
2	Gases like Carbon dioxide (CO_2) emission during fermentation	Asphyxiation.
3	Expose to dusts in grain handling area	Respiratory effects
4	Release of volatile flammable liquids due to equipment failures in process area	exposure causes asphyxiation and loss of consciousness. Release of flammable liquids in the presence of an ignition source can cause Fires, Explosions, Injuries and death
5	Expose to rotating parts of the machine	Injury to body parts

Following control measures will be taken to keep the exposure level within the permissible limit

Enzyme handling areas

1. Local exhaust ventilation (LEV) will be used to extract air close to the source and capture enzyme particles and aerosols.
2. Mixing and product transfer operations will be contained as much as possible
3. Spilled enzymes will be removed immediately by vacuum system equipped with a filter, mopping, or washing water.
4. Air monitoring shall be done to measure the workplace concentration of enzyme dust or mist in the air to assess the effectiveness of engineering controls and the potential for employee exposure.
5. Following personal hygiene measures will be followed to minimize exposure
    - Hands should be washed with water and mild soap after contact with enzyme materials.
    - Change work clothes daily and whenever they are soiled with enzyme material.
    - Avoid contact with face and eyes with enzyme contaminated clothing or gloves.

Emission of Carbon dioxide in fermentation area

1. Area will be well ventilated to prevent the gas from accumulating, especially in confined spaces.
2. To monitor the amount of Carbon dioxide, area will be provided with the gas detector sensors, alarm lights and sounders which will be securely fixed to walls.
3. Measures will be taken that area producing carbon dioxide will be enclosed by barriers that prevent it from leaking into other areas of the workplace.
4. Hazard warning signs will be posted in the work area to create awareness among the workers.
5. Self contained breathing apparatus respirators will be provided in the area to use in case of emergency

Exposure to solvents in process area

1. Proper ventilation systems will be ensured in the fermentation area
2. Maintaining equipment in safe operating condition at all times to preclude malfunctions.
3. Installing automatic fire detection and suppression systems at critical points within production areas, such as tank storage areas and ethanol load-out areas.
4. Installing explosion relief venting.
5. Purchasing equipment with design features that preclude/limit the occurrence of ruptures.
6. Competent person inspection shall be carried out for process handling equipments to check for any defects which could results to cause solvent spills.

Exposing to rotating parts of the machineries

To avoid the personnel contact with exposing to the rotating parts of the machineries following measures will be taken to prevent or minimize exposure to the risk of injury or death

1. Using specific signage on hazard
2. adequate work space or exclusion zones around machines
3. training for operators
4. regular maintenance
5. good housekeeping standards
6. provision and use of appropriate personal protective equipment
7. guarding to prevent the operator coming into contact with moving parts.
8. Machine guarding and interlocks will be inspected and maintained at regular intervals.

Other hazards

Electrical shock hazard

1. The plant management will ensure that safe systems of work are in place which enables the organization to comply with the electrical safety rules and regulation. This may include training, work procedures, authorized persons and auditing.
2. Ensuring all injuries, electric shocks and near misses are reported to the supervisors to take the required corrective actions.

3. Limiting or warning signages will be displayed to assist in preventing person/objects entering the exclusion area.
4. Only authorized persons are allowed to carry the electrical related works.
5. Electrical safety devices like Miniature circuit breakers and earth leakage circuit breakers will be provided to the machines and equipment to regulate the abnormal conditions and overload condition

Slips trips and falls

Slips trips and falls are a cause of injury in most large workplaces and can be caused by poor design, damage and in particular, poor levels of, or incorrectly placed lighting.

Possible control measures for slips, trips and falls includes

- regular housekeeping inspections
- maintenance (e.g. repair of leaking pipes, joints and vessels)
- adequate lighting
- barricading – short and long term
- regular floor repairs
- Identification of hazards with appropriate markings.

Table 7.7 Details of external agencies emergency contact

Sl.No	Name/Designation	Service	Contact Nos
1	Fire & rescue services, Karur	Fire	101/04324 – 240408
2	Medical Officer, Urban Primary Health Centre, Kulithalai	Medical	04323-222399
3	Government Head Quarters Hospital, Kulithalai	Medical	04323-222069
4	District collector office, Karur	Law and order	04324 257555
5	Commissioner, Municipal Office, Karur	Law and order	04324-260341
6	Kulithalai Police Station	Police	100/04323-222094
7	Revenue Divisional Officer, Kulithalai	Law and order	04323-222395
8	Tahsildar, Kulithalai	Law and order	04323-222015
9	Tamil Nadu State Pollution Control board	Pollution control board	044-22353134-142

Chapter

8

PROJECT BENEFITS

8.1 Improvement in physical infrastructure

- Due to implementation of the industry, there will be an increase in physical infrastructures in the study area such as housing, schools and health care facilities, etc.
- The raw materials such as Maize & Rice for distillery unit will be brought from nearby agricultural lands so that farmers will get better price for their crops and also the industry will arrange agricultural training programmes for farmers.

8.2 Improvement in social infrastructure

- The project provides employment opportunities to 100 people during construction phase and 450 people during operation phase which in turn improves their livelihood.
- Implementation of Corporate Social responsibilities to benefit the social communities in the region.

8.3 Employment potential – skilled, unskilled and semi-skilled

- The project will provide employment opportunities to 100 people during construction phase and to 450 people during operation phase (skilled -50, semi-skilled -100, unskilled -300) thereby enhancing the economic status of the local people.
- The workers for the project will be hired from the local area/nearest villages on permanent and temporary basis.
- Increase in indirect employment opportunities for raw materials suppliers and truck & lorry drivers for transportation of raw materials and products.

8.4 Other tangible benefits

- M/s Greenergy Pure Ethanol Pvt Ltd (GPEPL) aims to promote the use of renewable and environmentally friendly fuels and reduce India's import dependence for energy security.
- Ethanol is made from renewable plant sources, such as corn or rice, which can be grown and harvested annually.
- Green belt will be developed within the plant premises covering a total area of 11.34 Acres (34% of the total area). This will not only help to create healthy environment in the area but also acts as pollution sink and reducing the Carbon footprint of the industry. Further, avi-fauna population of the area will increase. Act as the barricade between industries and the surrounding Environment and helps in improve the microclimate of the region.

Chapter
9

ENVIRONMENTAL COST BENEFIT ANALYSIS

The Terms of Reference (TOR) issued by MoEF&CC, New Delhi vide File No.: IA-J-11011/46/2026-IA-II Dt: 16/02/2026 does not mandate to prepare Environmental Cost Benefit Analysis.

Chapter
10

ENVIRONMENT MANAGEMENT PLAN

10.1 Introduction

Environmental management plan helps in proper implementation of mitigation measures to reduce the adverse impacts of both Construction and operation Stages of the project. It is tool of ensure a safe and clean environment. The base line settings of different relevant environmental components in the study area are predicted potential impacts on those components due to the proposed project.

10.2 Environment Management Policy

10.2.1 EHS Policy

The management of M/s. Greenergy Pure Ethanol Pvt. Ltd. is committed to provide safe and healthy working environment for the prevention of work-related injuries and ill- health.

Top priority will be given to the health and safety of employees of the industry and pride to achieve zero accidents and injuries from the emphasis of instructing safe work practices in all area of the business.

To achieve the target of the EHS Policy, the management is being following/will be followed the below,

- Comply with the applicable EHS Legal and other requirements.
- Protect employees, clients, sub- contractors, visitors and assets from any harm.
- Ensure that all employees participate in the Health and Safety programs.
- Conserve Environment; ensure all tools are safe for use, to supervise employees on their work practices and to promote awareness in aspects of health, safety and environmental cares.
- Integrate health and safety procedures and best practices into every operational activity with assigned line- functional responsibilities at all levels.
- Set safety & Health metrics as indicators of excellence, monitor progress and continually improve health and safety performance.
- Comply and endeavor to exceed all applicable health & safety legal and other requirements.

The EHS policy of the industry is given in the below;

GREENERGY PURE ETHANOL PRIVATE LIMITED

Regd. Off: No.324, Golden Point 4, Off. Queens Road Cross, Vasant Nagar, Bengaluru 560052, KA, IN
Ph: 080- 49222220 // **Email:** tngpepl@gmail.com // **GST:** 29AAJCG8851F1Z6

Health and Safety Policy

M/s. Greenergy Pure Ethanol Pvt. Ltd. undertakes that, the industry will take responsibility for providing a safe Working environment for employees and protection of the environment and committed to minimize health and safety hazards by adopting safe work practices for sustainable growth. Also the company has developed and adopted standard operating procedures (SOP's) to deal with the environmental issues.

To achieve the objective of the HSE Policy, the management shall,

- Obey with the related HSE Legal necessities and Comply with relevant laws and regulations as well as take any additional measures considered necessary
- Safeguard workers, customers, sub- contractors, visitors and properties from any damage.
- Safeguard that all employees participate in the Health and Safety programs.
- Conserve natural resources, ensure all tools are safe for use, to supervise employees on their work practices and to promote awareness in aspects of health, safety and environmental cares.
- Integrate health and safety procedures and best practices into every operational activity with assigned line- functional responsibilities at all levels.
- Prevent the industrial risk rather than rectification at a later stage
- Set safety & Health metrics as indicators of excellence, monitor progress and continually improve health and safety performance.
- We shall ensure the effectiveness of our HSE policy may be achieved with the involvement of all the level of management and the support of all employees. We shall periodically review HSE Policy & its relevance in continuously improving working Environment.

Date: 03.03.2026

Greenergy Pure Ethanol Pvt. Ltd. Bengaluru

Managing Director

Regd. Off: No.324, Golden Point 4, Off. Queens Road Cross, Vasant Nagar, Bengaluru 560052, KA, IN

Fig 10.1 EHS policy of the industry

10.2.2 Environmental Committee

M/s. Greenergy Pure Ethanol Pvt. Ltd., will obtain necessary certifications for management of Environment, Health and Safety of the workers. The Managing Director will be responsible for management of Environment in the industry supported by Environmental Engineer, Safety officer, Production & maintenance department.

10.2.3 Structure of Environmental Cell

Environmental cell is constituted in the industry for effective management of environmental protection and pollution control. It consists of following members drawn out of the factory senior staff.

Table 10.1 Composition of Environment Management Cell (EMC)

Managing Director	Overview and implementation of Environmental management plan
Grain In-charge	Monitoring and implementation related to Health, Safety and Environment (HSE) aspects of the Grain Plant
Cogen plant In-charge	Monitoring and implementation related to Health, Safety and Environment (HSE) aspects of the cogen plant
Distillery in charge	Monitoring and implementation related to Health, Safety and Environment (HSE) aspects of the distillery
Health and Safety Manager	Reporting the Managing Director, Safety Committee and the Board, on matters regarding HSE performance, HSE Management System performance and the HSE risk position in the Industry
Environmental Engineer	Providing technical advice on implementation of HSE management plan.
Environmental Chemist	Collecting and analysing the samples and developing remediation's programs.
Safety Officer	To develop and implement occupational health and safety policy, program and procedure and relevant timely CAPA. To increase health and safety awareness at all levels within the organizations

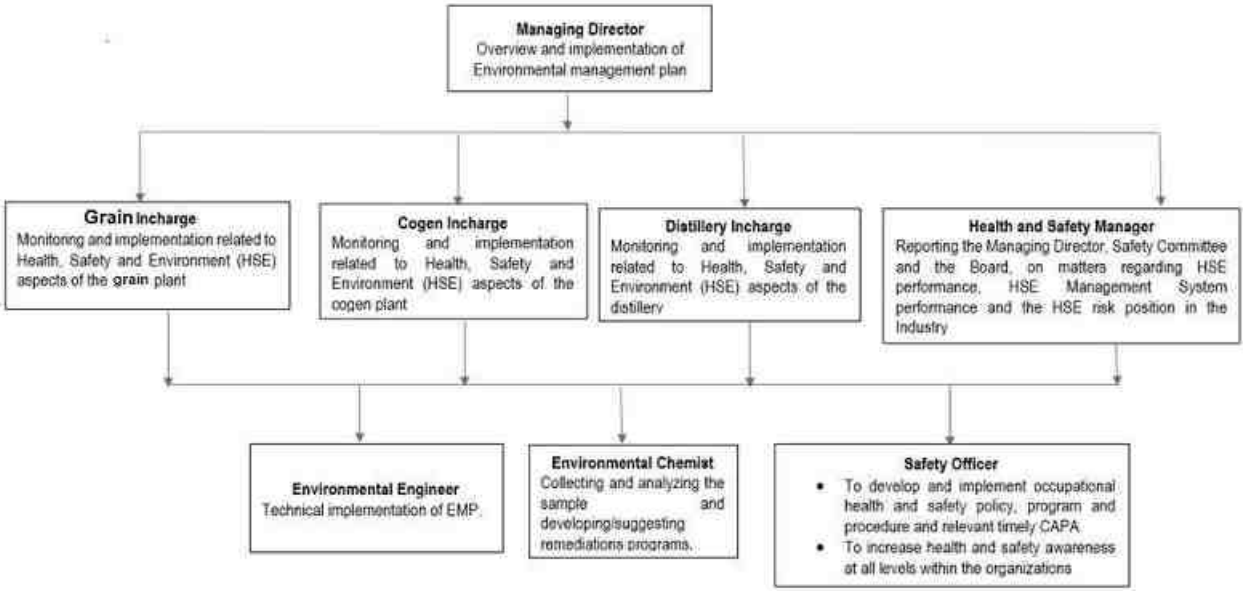


Fig 10.2 Environmental Management Cell

10.2.4 Records to be maintained

Following records will be maintained by the environmental department in respect of operation of pollution control facilities

- Log sheet for operating CPU for wastewater
- Log Sheet for Operation of APC plant
- Instruction manual for operation and maintenance of CPU, APC, etc.,
- Log sheets for self-monitoring of CPU & APC etc.,
- Manual for monitoring of Air, Water and soil for Ambient conditions
- Instruction manual for monitoring of water, solid and gaseous parameters discharged from the factory, and also for various parameters of pollution control facilities.
- Statutory records as per the Environmental Acts.
- Monthly and annual progress reports.

10.3 Monitoring of Environmental Management Plan

10.3.1 Air Quality

The environmental management plan for Air Quality during construction phase and operation phase is given the below Table.

Table 10.2 EMP for Air Quality during Construction and Operational Phase

Objective of EMP	To minimize air pollution emissions due to the project activities of the proposed project on surrounding environment					
Concern	Construction & industrial activities such as Site preparation, installation of machines may deteriorate air quality					
Benefit of EMP	Providing suitable mitigation measure for impact causing activity will helps in protection of health of employees and environment					
Impacting Activity	Mitigation Measures	Implementation & Management				
		Location	Timing	Responsibility	Monitoring	Remarks
Construction Phase						
Emissions from movement of vehicles and use of DG sets for construction activities.	• Regular water sprinkling will be done • The vehicle speed limit will be restricted to 15 kmph. • Sufficient stack height of 30 m will be provided to Backup DG sets.	At construction site of the project & along vehicular movement in the industry	Entire construction period	Site Engineer/Site In charger	• AAQM will be carried in Construction area near to air pollution causing sources. • Monitoring of vehicles to restrict speed limit. • Monitoring of vehicles for PUC.	PUC Certificate
Impacting Activity	Mitigation Measures	Implementation & Management				
		Location	Timing	Responsibility	Monitoring	Remarks
Operation Phase						
Emissions from vehicular movement, Boiler & Co gen plant. Fugitive emissions from raw material handling area, feeding and product separation processing areas	• Boilers will be connected to ESP with a stack height of 70 m. DG sets will be installed with acoustic enclosures and stack height of 30 m to mitigate the air pollution and CO_2 released during fermentation will be reduced by installing CO_2 recovery.	At all processing areas within the industrial premises	Entire operation period	Site Engineer/Site In charger	• AAQM will be carried in at various locations near to industrial operations within the plant • Monitoring of vehicles to restrict speed limit.	PPE will be provided to all the workers Health check-ups will be conducted to workers for respirable diseases

Objective of EMP	To minimize air pollution emissions due to the project activities of the proposed project on surrounding environment					
Concern	Construction & industrial activities such as Site preparation, installation of machines may deteriorate air quality					
Benefit of EMP	Providing suitable mitigation measure for impact causing activity will helps in protection of health of employees and environment					
Impacting Activity	Mitigation Measures	Implementation & Management				
		Location	Timing	Responsibility	Monitoring	Remarks
	• Clean air will be let out from the chimney of height 70 m after passed through ESP with an efficiency of 99.8 %. • Water sprinklers with truck mounted mist system will be adopted in the plant and water sprinkling will be carried out thrice a day to reduce dust. • Green belt will be developed all along the periphery of the industry • All the internal roads will be asphalted • Barricades will be installed all around the periphery.				• Monitoring of vehicles for PUC. • Monitoring of APCEs for good working condition	

10.3.2 Water Quality

The environmental management plan for Water Quality during construction phase and operation phase is given the below Table.

Table 10.3 EMP for Water Quality during Construction and Operational Phase

Objective of EMP	To avoid ground water or surface water contamination in the region					
Concern	Discharge of untreated water from labour colony on ground or water body may contaminate Surface or ground water quality in the area					
Benefit of EMP	Providing suitable mitigation measure to avoid ground water or surface water contamination					
Construction Phase						
Impacting Activity	Mitigation Measures	Implementation & Management				
		Location	Timing	Responsibility	Monitoring	Remarks
Disposal of sewage resulting ground water contamination, stagnation of water leading to mosquito breeding sites and affecting on workers health, storm water run-off resulting flooding	• Appropriate sanitation facilities will be provided for the workers to reduce impact on water resources. • Rain water harvesting measures would be taken. • Temporary garland drainage arrangements will be made around construction site & Labour camps to avoid stagnation of water. • Efforts will be made for reuse of water and its conservation.	At construction site	Entire construction period	Site Engineer/ Site In charger	• Water quality monitoring will be carried out in Construction area. • Maintenance of clean environmental around the labor camps	-
Operation Phase						
Impacting Activity	Mitigation Measures	Implementation & Management				
		Location	Timing	Responsibility	Monitoring	Remarks
Disposal of sewage resulting ground water contamination	• The excess condensate will be treated in CPU of capacity 2000 KLD. • Process Condensate & spent lees from distillery unit will be treated in CPU of capacity 2000 KLD and domestic sewage will be treated in STP of capacity 20 KLD.	At Plant	Operational Phase	Site Engineer/ Site In charger	• Ground Water quality monitoring will be carried out. • Maintenance of garland drains • Maintenance of STP	Records of Water consumption will be maintained

10.3.3 Noise Environment

The environmental management plan for noise level during construction phase and operation phase is given the below Table.

Table 10.4 EMP for Noise Environment during Construction and Operational Phase

Objective of EMP	To minimize the noise levels due to the proposed project activities					
Concern	Construction and Industrial activities may increase noise levels around the industry					
Benefit of EMP	Minimizing Nosie levels from the project					
Construction Phase						
Impacting Activity	Mitigation Measures	Implementation & Management				
		Location	Timing	Responsibility	Monitoring	Remarks
Construction activities, operation of construction equipment & movement of vehicles	• Noise generated equipment will be placed anti-vibrating mountings & provided with acoustic enclosures. • PPEs such as ear muffs & ear plugs will be provided to workers. • Internal speed limit will be restricted with 15 kmph for vehicles.	At construction site	construction period	Site Engineer/ Site In charger	• Periodic maintenance will be carried out for all high noise generating machinery / equipment. • Noise levels monitoring will be carried out at construction area	-
Operation Phase						
Impacting Activity	Mitigation Measures	Implementation & Management				
		Location	Timing	Responsibility	Monitoring	Remarks
Operation of Boilers, turbines, Co-gen plant, Other industrial operations, vehicular movements for loading and unloading of raw materials & finished products	• PPEs such as ear muffs & ear plugs will be provided to workers. • Noise generated equipment will be installed on anti-vibrating mountings & with acoustic enclosures. • Proper lubrication to machinery & traffic management measures will taken.	At work place	Once during week (24 hours)	Site In charger	• Periodic maintenance will be carried out for all machinery / equipment. • Noise levels monitoring will be carried out at work place.	PPEs will be given to the workers

10.3.4 Soil Conservation

The environmental management plan for soil environment during construction phase and operation phase is given the below Table.

Table 10.5 EMP for soil conservation during Construction and Operational Phase

Objective of EMP	To avoid soil contamination due to the site preparation, construction & industrial activities of the project					
Concern	Construction and Industrial activities may contaminate soil quality in the area					
Benefit of EMP	To avoid / minimize pollution of soil quality					
Construction Phase						
Impacting Activity	Mitigation Measures	Implementation & Management				
		Location	Timing	Responsibility	Monitoring	Remarks
Impacts on soil nutrients due to excavation and soil contamination due to solid waste disposal on ground	• Excavated earth shall be stored separately & utilized for green belt development. • Solid waste from labour camps will be handed over to local municipal body & Hazardous will be stored with leak proof barrels and handed to TNPCB approved recyclers.	At construction site	construction period	Site Engineer/ Site In charger	• Soil quality monitoring will be carried out at site	-
Operation Phase						
Impacting Activity	Mitigation Measures	Implementation & Management				
		Location	Timing	Responsibility	Monitoring	Remarks
Soil contamination due to storage, handling of Hazardous waste	• Solid waste from workers will be handed over to local municipal body & Hazardous will be stored with leak proof barrels and handed to TNPCB approved recyclers.	Industrial premises such as storage areas & ash handling area	Operational Phase	Site In charger	• Soil quality monitoring will be carried out within the plant. • Regular inspection will be carried out hazardous waste stored area	-

10.3.5 Solid & Hazardous Waste Management

The environmental management plan for solid & hazardous waste management during construction & operation phase is given the below Table.

Table 10.6 EMP for solid & hazardous waste management

Objective of EMP	To reduce soil and land contamination due to hazardous waste storage and disposal					
Concern	Pollution of soil, groundwater and surface water quality if disposed untreated / hazardous waste on ground					
Benefit of EMP	To avoid contamination of soil quality & water quality in the surrounding environment					
Impacting Activity	Mitigation Measures	Implementation & Management				
		Location	Timing	Responsibility	Monitoring	Records
Construction Phase						
Disposal of construction debris, metal scrap, empty paint cans, municipal solid waste generated from labours colony, etc., 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, empty cans will be handed over to authorized recyclers. • The municipal solid waste will be segregated in to organic & inorganic waste, organic waste will be composted in a small earth pit & in-organic waste will be handed over to TNPCB authorized recyclers.	At construction site	construction period	Site Engineer/ Site In charger	• Regular inspections will be carried out in hazardous waste storage area	MOU with TNPCB approved Hazardous waste re-processors.
Operation Phase						
Impacting Activity	Mitigation Measures	Implementation & Management				
		Location	Timing	Responsibility	Monitoring	Records
Improper disposal of generated solid wastes from the process such as Municipal Solid waste, Yeast Sludge, Sludge from	• Yeast sludge (94 TPD) and Sludge from CPU (100 TPD) will me mixed in required proportion and reused as manure and also handed over to member farmers.	At plant	Operational Phase	Site In charger	• Regular inspections will be carried out in hazardous waste storage area.	MOUs will be made for different types of solid & hazardous

Objective of EMP	To reduce soil and land contamination due to hazardous waste storage and disposal					
Concern	Pollution of soil, groundwater and surface water quality if disposed untreated / hazardous waste on ground					
Benefit of EMP	To avoid contamination of soil quality & water quality in the surrounding environment					
Impacting Activity	Mitigation Measures	Implementation & Management				
		Location	Timing	Responsibility	Monitoring	Records
CPU, Sludge, from STP, Boiler Ash/Fly ash/Bottom ash, DDGS, Empty Barrels / Containers	• Ash (36 TPD) will be used to manufacture bricks within industrial premises. • Used oil & Oil soaked cotton waste, spent turbine oil, waste oil residue from CPU will be stored at an identified place in leak proof containers& will be disposed to TNPCB authorised dealers. • Dried Distillery Grain Soluble of 300 TPD will be used as Cattle feed. • Municipal Solid waste will be segregated into organic & in-organic, organic waste will be composted in earth pits using wormy composting method and inorganic waste will be given to nearby municipal agencies & recyclers				• Regulars checks will be carried out for spillages of solid wastes	wastes management.

10.3.6 Land Use & Land Cover

The EMP for Land Use & Land Cover is given in below.

Table10.7 EMP for Land Use & Land Cover during Construction and Operational Phase

Objective of EMP	To minimized the negative impacts on LULC during construction & operation phase of the project and to suggest suitable mitigation measures						
Concern	Construction activities will change the land use pattern of the site from scrub land/open to industrial land/built up land						
Benefit of EMP	To reduce Impacts on land use and land cover from the project will be minimized						
Construction Phase							
Impacting Activity	Mitigation Measures	Implementation & Management					
		Location	Timing	Responsibility	Monitoring	Records	Remarks
Construction activities	• Excavated soil earth will be stored separately and fully utilized for green belt development activities. • Scrubs will be cleared if necessary for construction activities. • Greenbelt will be developed in and around the industry as a compensatory.	At project Site	constructi on period	Site Engineer	• Random checks by site engineer	Photographs will be maintained periodically	-
Operation Phase							
Impacting Activity	Mitigation Measures	Implementation & Management					
		Location	Timing	Responsibility	Monitoring	Records	Remarks
Deposition of fly ash and dust on trees/vegetation/crops around the industry due to industrial process. This may affect the photosynthetic activity and the rate of transpiration of the species located up to 4 Km radius from the project site. The leakage of Used Oil waste may result in soil contamination.	• Regular water sprinkling will be done near storage area. Installation of wet scrappers, bag filters & ESPs and its proper maintenance will reduce the dust spillage on adjacent lands. • Used oil and Oil soaked cotton waste will be stored separately with impervious layer and handed over to TNPCB authorized recyclers.	At plant	Operation al Phase	Site In charger	• Regular inspections will be carried out in plant by site in charger	Photographs will be maintained periodically	.

10.4 Rainwater Harvesting System Calculations

Table 10.8 Estimation of Quantum Runoff available through Rainwater

Sl. No.	Particulars	Area (Sqm)	Rainfall (m)[20]	Runoff Coefficient*	Quantum of Run off available (Cum/Year)
	1	**2**	**3**	**4**	**5 (2*3*4)**
1	Roof Top of building/Shed	12,960.00	0.8	0.85	8,812.80
2	Road/Paved area	41,900.00	0.8	0.65	21,788.00
3	Greenbelt & Open Land	49,900.00	0.8	0.4	15,968.00
Total (Sq.m)		**1,76,474.22**		**Total Quantum of available runoff (cum/y)**	**46,568.80**
Annual rainfall : 800 mm					
Source: : India Meteorological Department, Chennai-600 006, DES-Chennai Statistical Hand Book of Tamil Nadu-2020-21 (https://www.tn.gov.in/deptst/climateandrainfall.pdf)					

The total runoff available from project site is 46,569 m^3/Annum, which will be collected in 1*30000KL (100X60X5) and 1*17000KL (100X34X5) surface ponds and collected rainwater will be utilized for process/secondary purposes in the industry.

10.5 Energy Conservation measures

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. Details are provided in Chapter 5.

10.6 Green belt Development plan

10.6.1 Guidelines for plantation

As part of green belt development programme, reducing pollution, improving the local biodiversity and aesthetic values at the industrial premises, native trees with broad leaves, Air Pollution Tolerance index will be selected for planting. The planting techniques and monitoring plan is given below;

- The pit size for planting trees will be maintained at 45 cm x 45 cm x 45 cm.
- Top soil removed from the project area shall be used for filling the pit will be mixed with well decomposed farm yard manure in the range of 2.0– 3.0 kg.
- The filling of soil will be completed at least 7 days prior to the plantation.
- Seedlings with good condition shall be identified and opted for plantation.
- The distance between the trees shall be maintained at 2 m and underneath shrubs and herbs can be grown.

[20] India Meteorological Department, Chennai-600 006, DES-Chennai Statistical Hand Book of Tamil Nadu-2020-21 (https://www.tn.gov.in/deptst/climateandrainfall.pdf)

- ❖ The plantation needs to be monitored regularly by watering, weeding, application of manure and impart proper protection.
- ❖ Dead species will be replaced immediately.

Table 10.9 Details of Green belt development plan

Proposed area for green belt	Procurement of seedlings	Responsibility & Monitoring Agency	No. of seedlings for plantation	Cost in ₹
Total area for Greenbelt: 4.67 Ha. (34.64%)	MR Palyam Forestry Extension Center at Trichy/ Annanagar Nursery at Chennai	M/s Greenergy Pure Ethanol Pvt. Ltd.	11,475 Samplings 127 existing trees in the periphery will be retained as a part of greenbelt Proposed Greenbelt:- 11,348 Saplings	a) 250/- per saplings x 11,348 saplings = ₹ 28,37,000/- b) Watch & ward(Lumpsum for 1 year) = ₹ 7,00,000/- c) Maintenance of Green belt (For 1 year) =₹ 7,00,000/-
			Total	₹ 42,37,000/-

Table 10.10 Time frame for Green belt development

Green belt development within the project site						
Year	No. of rows	Area	No. of saplings	Cost for saplings	Watch & ward/ Maintenance Cost	Cost in INR
1st year	3	All along the periphery	7,000	17,50,000/-	7,00,000/-	35,37,000/-
	-	Internal Roads & other green cover areas	4,348	10,87,000/-		
2nd year	-	-	-	-	7,00,000/-	7,00,000/-
		Total	11,348	28,37,000/-	14,00,000/-	42,37,000/-

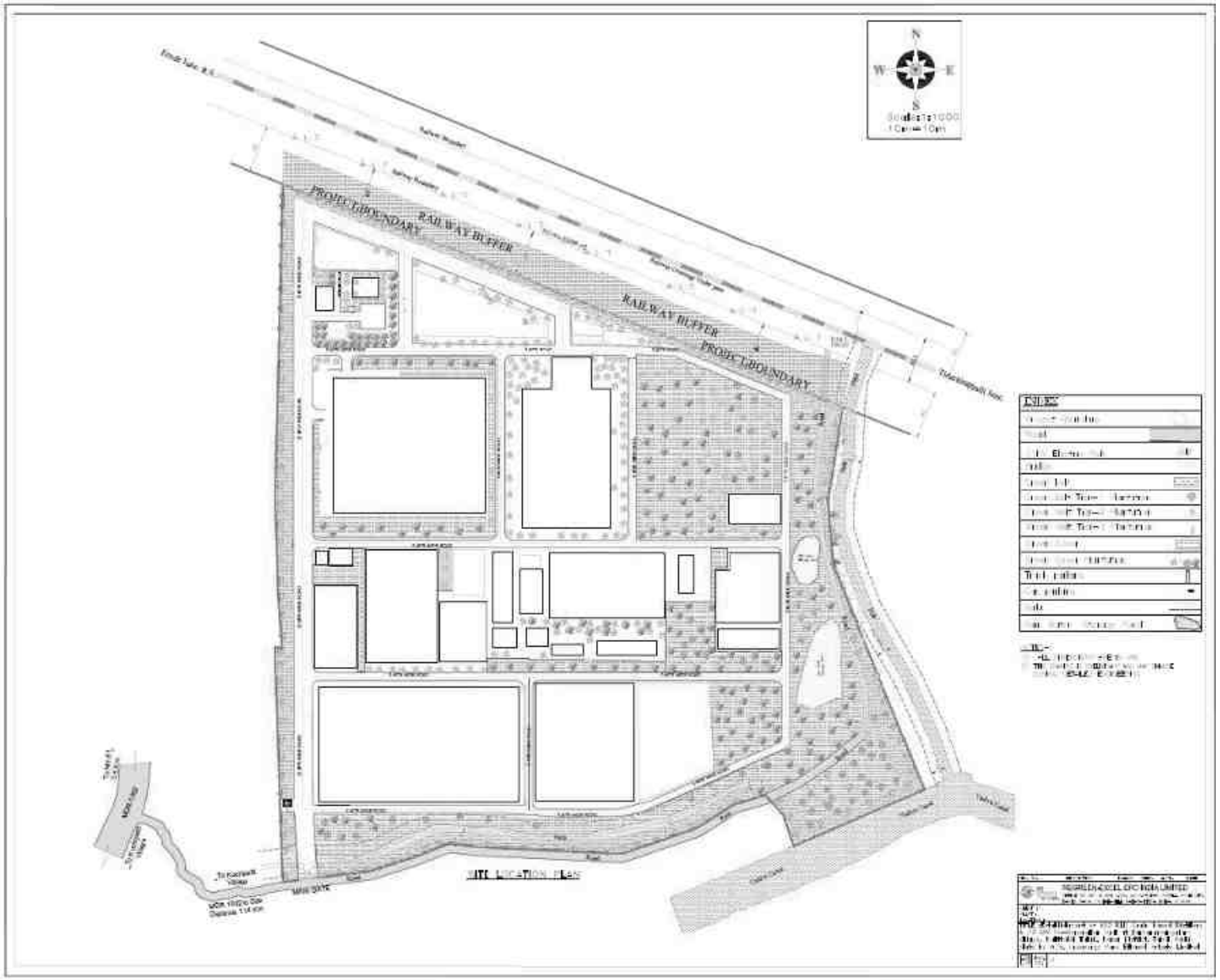


Fig 10.3 Map showing greenbelt development Plan

Table 10.11 List of tree species recommended for Green Belt Development

Sl. No	Area of plantation	Scientific name	Common	Family	Uses	Height (m)	Crown shape^	APTI index	Broad leaved	Numbers	Carbon Sequestration capacity
Green belt											
1	Tier -1	*Grevillea robusta*	Savukku-maram	Protaceae	Folk	20	Oblong	-	-	600	20.68
2		*Millingtonia hortensis*	Kat-malli	Bignoniaceae	Ornamental	10	Oblong	13.064$^{\$}$	-	600	23.41
3		*Tectona grandis*	Tekku	Verbenaceae	Timber	20	Oblong	14.41$^{\#}$	✓	600	23.80
4		*Terminalia arjuna*	Marutu	Combertaceae	Edible & medicinal	15	Oblong	-	-	300	15.61
5		*Syzygium cumini*	Nagai	Myrtaceae	Edible & Medicinal	20	Oblong	10.22$^{\#}$	-	700	31.86
6		*Ailanthus excelsa*	Agal	Simaroubaceae	Medicinal	12	Oblong	-	-	300	10.14
7		*Peltophorum pterocarpum*	Perung Kondrai	Fabaceae	Medicinal	12	Oblong	11.03$^{\#}$	-	500	16.91
8	Tier -2	*Azadirachta indica*	Veppai	Meliaceae	Medicinal &Traditional	15	Spreading	11.75*	-	600	28.09
9		*Bauhinia racemosa*.	Atti	Fabaceae	Ornamental &Medicinal	7	Oblong	12.98*	-	200	8.19
10		*Dalbergia sisoo*	Nukkam	Fabaceae	Timber	20	Round	32.5*	-	300	13.46
11		*Holoptelia intigrifolia*	Thappichan maram	Ulmaceae	Medicinal	12	Oblong	13.45*	-	400	13.53
12		*Madhuca longifolia*	Kat-illipi	Sapotacaea	Medicinal & folk	15	Round			300	14.44
13		*Mangifera indica*	Mango	Anacardiaceae	Edible &Fuel wood	15	Round	14.85$^{\#}$	-	300	10.14
14	Tier -3	*Butea monosperma*	Murukkan-Maram	Fabaceae	Ornamental	13	Round	8.33$^{\#}$	✓	300	10.14
15		*Cordia dichotoma*	Naruvili	Boraginaceae	Medicinal &edible	10	Round	-	-	200	5.98
16		*Delonix regia*	Kakkapoo maram	Fabaceae	Ornamental	15	Spreading	13.38$^{\#}$	-	100	3.38
17		*Terminalia bellerica*	Thandrikkai	Combertaceae	Medicinal	15	Oblong	-	✓	200	8.97
18		*Pithecellobium dulce*	Kodukkappuli	Fabaceae	Edible, medicinal	12	Round	-	-	200	8.58
19		*Limonia acidissima*	Vilam Parham	Rutaceae	Edible & Medicinal	12	Oblong	-	-	200	6.76
20		*Aegle marmelos*	Vilvam	Rutaceae	Medicinal &Traditional	12	Oblong	9.63$^{\#}$	-	100	5.07
Green cover areas											
21		*Alstonia scholaris*	Ezilai pillai	Apocynaceae	Ornamental &Medicinal	15	Round	14.27$^{\$}$	✓	600	15.22

Sl. No	Area of plantation	Scientific name	Common	Family	Uses	Height (m)	Crown shape^	APTI index	Broad leaved	Numbers	Carbon Sequestration capacity
22	Internal roads and other areas	*Albizia amara*	Arappu	Fabaceae	Fodder, fuel wood & timber	15	Spreading	13.4*	-	98	4.59
23		*Albizia lebbeck*	Vagai	Fabaceae	Timber	15	Spreading	11.27	-	100	3.58
24		*Annona squamosa*	Sitapalam	Annonaceae	Medicinal &edible	10	Round	10.63#	-	500	16.91
25		*Araucaria columnaris*	Christmas tree	Araucariaceae	Ornamental	15	Oblong	-	✓	250	6.99
26		*Artocarpus heterophyllus*	Palaa	Moraceae	Edible and medicinal	10	Oblong	9.28	-	250	9.43
27		*Tabebuia aurea*	Silver Trumpet Tree	Bignoniaceae	Ornamental	8	Spreading	-	-	550	19.31
28		*Tabebuia rosea*	Vasantha Rani	Bignoniaceae	Ornamental	8	Spreading	-	-	550	20.39
29		*Cassia fistula*	Konrai	Fabaceae	Ornamental & medicinal	12	Round	-	-	500	26.66
30		*Polyalthia longifolia*	Asoothi	Annonaceae	Ornamental & windbreak	10	Conical	14.38#	-	600	21.85
31		*Ficus benghalensis*	Alamaram	Moraceae	Edible &Medicinal	20	Spreading	-	✓	100	3.19
32		*Ficus religiosa*	Arasu	Moraceae	Medicinal &Traditional	20	Round	14.55*	✓	100	2.86
33		*Tamarindus indica*	Puli	Fabaceae	Edible &medicinal	20	Spreading	11.68#	-	50	3.22
34		*Zizyphus mauritiana*	Ilantai	Rhamnaceae	Edible & medicinal	10	Round	-	-	100	3.38
									Total	**11,348**	**436.73**
When the Existing greenbelt species attains the minimum girth of 30 Cm and minimum height of 5 m the total carbon sequestering capacity of individual species is given above and the total carbon sequestering capacity of tree species is 436.73 tonnes											

Note:- Species Recommended from Guidelines for developing Greenbelt, Central Pollution Control Board, March 2000

*- M. KRISHNAVENI, Department of Biochemistry, Periyar university, Salem, 2013 Biochemical Changes in Plants Indicating Air Pollution Published in International Journal of Pharmacy and Pharmaceutical sciences.

#- Air Pollution Tolerance Index (APTI) of fifteen selected plant species at different bio indicator stations in the Nanded city.

=- G. Buchchi Babu, S. Nazaneen Parveen, K. Naveen Kumar, M. Sridhar ReddyEvaluation of Air Pollution Tolerance Indices of Plant Species Growing in the Vicinity of Cement Industry and Yogi Vemana University Campus.

+- Bhavika Sharma1, Sandeep Sharma1, S. K. Bhardwaj2 , Lakhvinder Kaur3 and Abhay Sharma2 Evaluation of Air Pollution Tolerance Index (APTI) as a tool to monitor pollution and green belt development.

$- ABIDA BEGUM and S. HARIKRISHNA Department of Chemistry P.E.S School of Engineering, Bangalore, Evaluation of Some Tree Species to Absorb Air Pollutants in Three Industrial Locations of South Bengaluru, India.

%- Dhruti Patel*, J. I. Nirmal Kumar An Evaluation of Air Pollution Tolerance Index and Anticipated Performance Index of Some Tree Species Considered for Green Belt Development: A Case Study of Nandesari Industrial Area, Vadodara, Gujarat, India&-https://www.semanticscholar.org/paper/Comparative-Assessment-of-Air-Pollution-Tolerance-%2C Alezona/39cdcb4041b2d289dc061a39d29f56bc8662225d.^-Nitesh Joshi1*, Ambika Joshi2 and Bharati Bist Air Pollution Tolerance Index of Some Trees Species from the Industrial area of Tarapur

10.7 Traffic Management Measures

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). In order to ensure the safety of the passengers through both approach road and internal roads within project site, the following traffic management plan will be implemented;

- Installation of Street lights, Pavement edge markings, center line markings with road studs for better illumination during night times.
- Installation of sign boards on either direction of the road like Speed limits of 40 kmph, Informatory boards on either side of the road with respect to steel bridge crossing, directions, Road humps parking boards within industry, etc.
- A high mast light will be installed along the approach road, village road and steel bridge crossing for better illumination.
- Pedestrian crossings will be made to cross the road.
- Direction sign boards will be installed.
- Security personnel will be employed in shift basis to ensure smooth flow of traffic.

10.8 Summary of the cost estimates for implementation of EMP

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.

Table 10.12 Cost for implementation of EMP

Sl. No.	Particulars	Cost in Lakh Rs. (Capital Cost)	Cost in Lakh Rs. (Recurring Cost per Annum)
1	Air Pollution Mitigation Installation of APC Equipment such as ESP, closed conveyor, purchasing of Vacuum machine, barriers,Water sprinkling in internal roads during operation phase	850	25
2	Installation of mobile STP & sanitation facilities to labours during construction phase	50	-
3	Stack arrangements for DG sets & maintenance	20	5
4	Drinking water facilities to labours during construction phase	20	-
5	Erection of barricades & water sprinkling during construction phase and dyke wall around the ethanol storage tank.	50	-
6	Health & Medical facilities to labours during construction phase	100	-
7	Stacking of excavated earth and construction of garland drains around the construction site	27	-
8	Provision of piezometers	50	6.0

Sl. No.	Particulars	Cost in Lakh Rs. (Capital Cost)	Cost in Lakh Rs. (Recurring Cost per Annum)
9	Noise Level Mitigation Measures - installations of anti-vibrating pads & provision of acoustic enclosures/silensores	50	10
10	Installation of Water Treatment Plant	150	10
11	Provision of CPU & STP	800	20
12	Installation of MEE	100	20
13	Online Continuous Monitoring of Emissions & Effluents System (OCMES)	65	15
14	Construction of surface rainwater Harvesting ponds and storm water drains	150	10
15	Traffic management plan and asphalting of internal roads	250	10
16	Upgradation of approach road to project site	690	10
17	Provision of culverts/bridge across nala	50	
18	Provision of solar panels & lighting as part of Energy Conservation measures	800	10
19	Solid & hazardous waste management	70	14
20	Green belt development	28.5	14
21	Risk Management & Occupational Health and Safety	125	16
22	Environmental Monitoring	4.5	8
	Total	**4500**	**203**
	Corporate Environmental Responsibility (CER) cost	600	

Chapter
11

SUMMARY & CONCLUSION

11.1 Overall justification for implementation of the project

The industrial alcohol is used in most of the industries such as chemical industries in the manufacture of primarily the basic carbon based products like Acetic Acid, Butanol, Butadiene, Acetic Anhydride, Vinyl acetate, PVC etc. Pharmaceutical industries for manufacturing of insulin, antibiotics, tonics and several other essential bulk drugs and finished formulations, Extra-Neutral-Alcohol (ENA) is also useful for manufacture of cosmetics and perfume as well as in petroleum based products, etc. The industrial alcohol is the base or raw material for the most of these industries.

Karur District and surrounding districts have strong agricultural bases producing rice, maize, sorghum and other grains suitable for ethanol production. Establishing a grain based distillery in this District allows flexibility to use grain as feedstock throughout the year ensuring year-round raw material availability and minimizing supply risks.

The project assures economic development at Karur District through a capital investment of ₹ 600 Cr. and employment generation to local people. The project also assures energy and sustainability benefits through cogeneration, circular economy and Environmental Management practices.

Therefore, M/s Greenergy Pure Ethanol Pvt. Ltd. has proposed for establishment of 600 KLD Grain Based Distillery Unit & 13 MW Co-generation Unit at Kumaramangalam Village, Kulithalai Taluk, Karur District, Tamil Nadu State.

11.2 Explanation of how, adverse effects have been mitigated

- Minimizing the pressure on fresh water demand by utilizing the rain water from RWH ponds and treated water through CPU and STP.
- 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.
- 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.
- 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.

- Rainwater (47,000 KLD) stored in Rainwater ponds will be utilized for process for 19 days and fresh water from Cauvery River will be utilized for 311 days.
- The required Power will be met from proposed 13 MW Co-gen Unit & excess power will be sold to power grids. The proposed Project involves existing DGs of capacity 2 Nos. x 750 KVA as back up.
- A total energy output of 561 MW/A contributing to energy savings of 15.45% will be ensured through installation of solar panels within project site.
- APC measures such as ESP's are installed to minimize the impact of air pollutants on air environment.
- 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 inhouse brick manufacturing units.
- Three tier green belt plantation along with green cover (34.64%) will be ensured within the project site.
- Overall, this project will have positive impact on the Environment if, the recommended Environmental Management & monitoring aspects, measures are fully implemented in high spirit by the project proponents.

Chapter

12

DISCLOSURE OF CONSULTANTS ENGAGED

M/s Environmental Health and Safety Consultants Pvt. Ltd (EHSC) is located at Rajajinagar, Bengaluru have been involved in obtaining Environmental Clearances for various developmental projects from the Ministry of Environment, Forests & Climate Change (MoEF&CC), New Delhi and State Level Environment Impact Assessment Authority (SEIAA) since 2002.

In accordance with the orders and notifications of the MoEF&CC, Govt. of India, the organization is ISO 9001:2015 certified and accredited as 'A' category organization from National Accreditation Board for Education and Training (NABET) in thirteen sectors;

1) River Valley and irrigation projects,
2) Thermal power plants,
3) Beneficiation plants,
4) Metallurgical industries (ferrous & non-ferrous),
5) Synthetic Organic Chemicals industry,
6) Oil and gas transportation pipeline,
7) Distilleries,
8) Sugar industry,
9) Highways,
10) Building & Construction projects,
11) Township & Area Development Projects,
12) Pesticides,
13) Industrial estates / SEZ.

The company comprises of highly dynamic and well qualified team of Environmental Engineers and subject experts, both in-house and empaneled in various fields such as Ecology and Biodiversity, Socio-economics, Soil Conservation, Land Use studies, Hydrology, Geology, Risk Assessments, etc.

M/s EHSCPL, Bangalore have been entrusted by the M/s Greenergy Pure Ethanol Pvt. Ltd. for preparation of necessary application for obtaining TOR, collection of baseline data and preparation of EIA/EMP report, conducting environmental public hearing obtaining Environmental clearance from MOEFCC. The names of the consultants involved in preparation of the present EIA/EMP study is given in the beginning of the EIA report. Categories of projects completed by the organization are as follows;

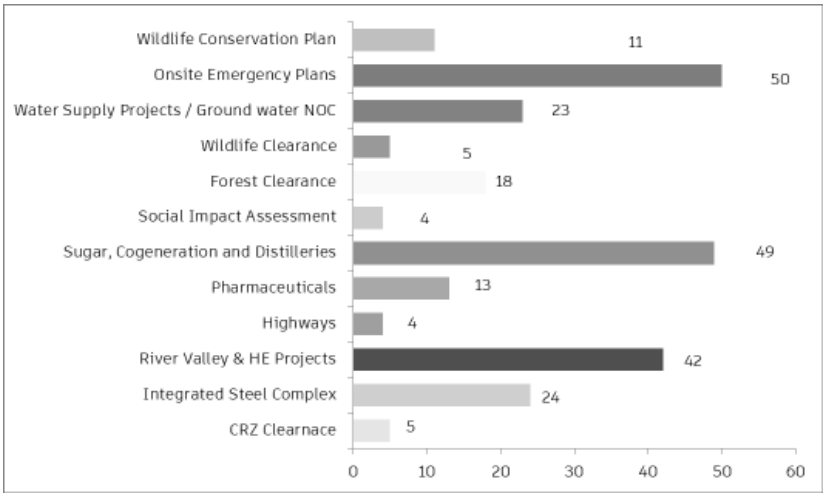


Fig 12.1 Details of projects completed by Ms. EHSC, Bangalore as on 31.12.2025

The organization has sister concern state of art external environmental laboratory at Bengaluru capable of conducting all types of sampling and analysis related to Air, Water, Noise and Soil. Bengaluru laboratory namely Environmental Health & Safety Research & Development Centre LLP (EHSRDC LLP) is accredited from National Accreditation Board for Testing and Calibration Laboratories (NABL) and recognized from CPCB under the E(P) Act, 1986 and also certified for ISO 9001:2015, 14001:2015 and OHSAS 18001:2007. The laboratory services will be utilized for baseline data collection for preparation of EIA studies.

Brief Resume of Experts available in the organization are as follows;

Sl. No.	Name	Education Qualification	Total Years of experience	Area of interest
Inhouse Experts				
1	Shivanand M. Dambal	B.E (Environmental Engineering)	25	Integrated Sugar and Distillery complex, River Valley and hydroelectric projects, Integrated steel complex, Air pollution & control, Water pollution & Control, Solid & Hazardous waste management, Environmental monitoring & compliance, Onsite emergency plan & Risk assessment
2	Dr. T. M Santhosh Kumar	M.Sc, Ph.D (Environmental Science)	18	River Valley and hydroelectric projects, Mineral beneficiation, Highways, Building Construction and Township projects, Ecology & Biodiversity studies, Noise

Sl. No.	Name	Education Qualification	Total Years of experience	Area of interest
				Level Monitoring & analysis, Sustainability, Environmental compliance, Environmental legislations
3	Dr.Pramod Kumar G.R	M.Sc Ph.D, PGDM (Geography, Geo-informatics)	16	Remote Sensing and GIS, Land use planning, Socio Economics, Forest encroachment, Forest resources mapping
4	Mr. Manjunatha K R	M. Sc. (GIS&RS)	11	Remote Sensing and GIS, Total Station, DGPS Survey and Mapping, Autocad
5	Mr. Naresh G	MSW	10	Socio-economics, Social survey, Need based Assessments, Social Impact Assessment, Rehabilitation and Resettlement, Corporate Social and Environmental Responsibility
6	Mrs. Manisha A. Appannavar	M.Tech (Environmental Engineering)	10	Meteorology, Air Quality Modeling & Prediction, Solid and Hazardous Waste Management, Air pollution monitoring, prevention and control, Sugar, Distilleries industries, Building and construction projects, Townships and Area development projects.
7	Ms. Prabha S J	M.Sc. (Environmental Science)	9	River Valley & hydroelectric projects, Synthetic organic chemicals industry, Township & area development projects, construction projects, Ecology & Biodiversity studies, Soil conservation aspects, Environmental, Social and Governance (ESG), Climate change, Environmental legislations, compliance and reporting.

Sl. No.	Name	Education Qualification	Total Years of experience	Area of interest
8	Mr. Murgesh C. Bukitgar	M.Tech (Environmental Engineering)	9	Hydrology, Ground Water and Water Conservation, Solid and Hazardous Waste Management, River Valley Projects
9	Ms. Priyanka S. Shindhe	B.E (Civil Engineering)	5	Air pollution Monitoring, Prevention and Control, Water Pollution Monitoring, Prevention and Control, River Valley Projects.
10	Mrs. Pooja H. S	M.Tech (Environmental Engineering)	4	Meteorology, Air Quality Modeling & Prediction, Air pollution monitoring, prevention and control, Metallurgical industries, Sugar, Distilleries industries, Building and construction projects, Townships and Area development projects.
11	Mrs. Meena H R	M.Sc (Botany)	4	Ecology & biodiversity Studies, Soil conservation, Preparation of reports on wildlife, Tree Survey
12	Mrs. Swathi B K	M.Sc. (Environmental science)	3	Building and construction projects, Water Pollution, Soil Conservation
Empaneled Expert				
13	Shri. M. F Rahman	M.F.Sc (Fishery science)	62	Aquatic ecology, Limnological and fisheries investigation and fishery development.
14	Shri. Prabhakar K. S	M.Sc (Agriculture)	45	Soil conservation, land use planning, agronomy, Remote sensing and GIS, Watershed development
15	Shri. Chandrasekar Gudla	B.E (Chemical Engineering)	45	Environmental Health and Safety aspects in Industries, Risk and Hazard management, Occupational Health and Safety, Waste minimization and water conservation, Onsite and offsite emergency

Sl. No.	Name	Education Qualification	Total Years of experience	Area of interest
				plans, Disaster management plan
16	Dr. Govindarajula Chandrasekhar Rao	M.Sc, Ph.D (Geology)	36	Remote sensing and GIS, Hydro-geology, Irrigation projects, Oil and Gas transportation pipeline projects, Industrial estates and special economic zones
17	Dr. L G Ashwathnarayan	M.Sc, Ph.D (Geology)	34	Hydrogeological studies, Remote sensing and GIS, Ground water modelling, hydrograph analyses, ground water fluctuation studies, terrain modelling
18	Shri. Venkata Naresh Kumar	M.Sc, M.Sc Tech. (Geology), PGDEL&P	29	Hydrogeological studies, Remote sensing and GIS, Ground water modelling, hydrograph analyses, ground water fluctuation studies, terrain modelling
19	Dr. Kumar M.	M.Sc, Ph.D (Environmental Science)	18	Academy, research, climate change, ecology and biodiversity, Soil conservation, Carbon management
20	Mrs. Raksha A.	M.Tech (Geo-informatics)	10	Hydrology, Remote Sensing and GIS, Ground water modelling, Hydrogeological studies

Brief Resume of Experts available in the EHSRDC LLP are as follows;

Sl. No	Name	Education Qualification	Total years of experience	Area of interest
1	Mrs. Amulya V.K	M.Sc (Biotechnology)	18	Air Quality monitoring, source emission monitoring and Noise level monitoring
2	Mrs. Nethravathi L	B.Sc (Chemistry)	16	Quality Manager, planning and coordination for sample collection and analysis
3	Mr. Tejaswi N	M.Sc (Chemistry)	15	Technical Manager, planning and coordination for sample

Sl. No	Name	Education Qualification	Total years of experience	Area of interest
		M.Sc (Biochemistry)		collection and analysis, Food analysis
4	Mrs. Anupama S	B.Sc (Chemistry)	15	Water and Waste water analysis, instrumentation
5	Shri. Basavaraj K. M	M.Sc (Microbiology)	15	Microbial analysis of water and waste water and food samples
6	Mrs. Aparana C. Hiremath	M.Sc (Chemistry)	15	Water and Waste water analysis
7	Mrs. Sumathi M	B.Sc (Chemistry)	15	Instrumentation and chromatography
8	Mr. Chandan Kumar R T	M.Sc (Biochemistry)	10	Air Quality monitoring, source emission monitoring and Noise level monitoring
9	Smt. Netra Priyadarshini	M.Sc (Microbiology)	7	Microbial analysis of water and waste water and food samples
10	Mr. Prashanth T	M.Sc (Biochemistry)	5	Soil and radiological sample analysis

ANNEXURE-1

File No.: IA-J-11011/46/2026-IA-II
Government of India
Ministry of Environment, Forest and Climate Change
IA Division
****

Dated **16/02/2026**

To,

Shri. Syed Fahad
M/s. gREENERGY PURE ETHANOL PRIVATE LIMITED
M/s Greenergy Pure Ethanol Pvt Ltd, 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-639107, Kumaramangalam, KARUR, TAMIL NADU, 639107
gpepl.ebp2024@gmail.com

Subject: **Establishment of 600 KLD Grain based Distillery Unit & 13 MW Co-Generation Unit by M/s. Greenergy Pure Ethanol Private Limited - Grant of Standard Terms of Reference (ToR) under the EIA Notification 2006-and as amended thereof-regarding**.

Sir/Madam,

This is in reference to your application submitted to MoEF&CC vide proposal number IA/TN/IND2/567778/2026 dated 12/02/2026 for grant of Terms of Reference (ToR) to the project under the provision of the EIA Notification 2006-and as amended thereof.

2. The particulars of the proposal are as below :

(i) ToR Identification No.	TO26A2504TN5135955N
(ii) File No.	IA-J-11011/46/2026-IA-II
(iii) Clearance Type	Fresh ToR
(iv) Category	A
(v) Project/Activity Included Schedule No.	5(g) Distilleries,1(d) Thermal Power Plants
(vi) Sector	Industrial Projects - 2
(vii) Name of Project	Establishment of 600 KLD Grain based Distillery Unit & 13 MW Co-Generation Unit by M/s. Greenergy Pure Ethanol Private Limited
(viii) Name of Company/Organization	gREENERGY PURE ETHANOL PRIVATE LIMITED
(ix) Location of Project (District, State)	KARUR, TAMIL NADU
(x) Issuing Authority	MoEF&CC
(xi) Applicability of General Conditions	NO

Plot/Survey Khasra Nos.: 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

3. The MoEF&CC has examined the proposal in accordance with the Environment Impact Assessment (EIA) Notification, 2006 & further amendments thereto and after detailed examination hereby decided to grant Standard Terms of Reference to the instant proposal of M/s.gREENERGY PURE ETHANOL PRIVATE LIMITED under the provisions of the aforementioned Notification.

4. Standard Terms of Reference are annexed to this letter as Annexure (1). The brief about products and by-products as submitted by the Project proponent in Form-1 (Part A, B) are annexed to this letter as Annexure (2).

5. As per SO S.O. 751(E) dated 17th February, 2020 the validity of ToR shall be four years. The Ministry reserves the right to stipulate additional TORs, if found necessary.

6. The Standard Terms of Reference (ToR) to the aforementioned project is under provisions of EIA Notification, 2006 and as amended thereof. It does not tantamount to approvals/consent/permissions etc required to be obtained under any other Act/Rule/regulation. The Project Proponent is under obligation to obtain approvals /clearances under any other Acts/ Regulations or Statutes, as applicable, to the project.

7. The granted letter, all the documents submitted as a part of application viz. Form-1 Part A and Part B are available on PARIVESH portal which can be accessed by scanning the QR Code above.

Copy To

1. The Principal Secretary, Department of Environment, Ground Floor, Panagal Buildings 1, Jeenis Road, Saidapet, Chennai - 600 015.
2. The Regional Officer, Ministry of Env., Forest and Climate Change, Integrated Regional Office, 1st and 2nd Floor, Handloom Export Promotion Council, 34, Cathedral Garden Road, Nungambakkam, Chennai-34
3. The Member Secretary, Central Pollution Control Board PariveshBhavan, CBD-cum-Office Complex, East Arjun Nagar, Delhi - 32
4. Member Secretary, Tamil Nadu Pollution Control Board, 76, Anna Salai, Guindy Industrial Estate, Race View Colony, Guindy, Chennai - 32 (Tamil Nadu)
5. Compliance & Monitoring Division, Ministry of Environment, Forest and Climate Change, Indira ParyavaranBhawan, JorBagh Road, New Delhi
6. District Collector, Karur, Tamil Nadu
7. Guard File / Monitoring File / Parivesh Portal / Record File

Annexure 1

Standard Terms of Reference for conducting Environment Impact Assessment Study for Distilleries and information to be included in EIA/EMP report

1. Executive Summary

Sr. No.	Terms of Reference
1.1	Executive Summary

2. Introduction

Sr. No.	Terms of Reference
2.1	Details of the EIA Consultant including NABET accreditation

Sr. No.	Terms of Reference
2.2	Information about the project proponent

3. Project Description

Sr. No.	Terms of Reference
3.1	Cost of project and time of completion.
3.2	Products with capacities for the proposed project.If expansion project, details of existing products with capacities and whether adequate land is available for expansion, reference of earlier EC if any.
3.3	List of raw materials required and their source along with mode of transportation.
3.4	Other chemicals and materials required with quantities and storage capacities
3.5	Details of Emission, effluents, hazardous waste generation and their management. Requirement of water, power, with source of supply, status of approval, water balance diagram, man-power requirement (regular and contract)
3.6	Process description along with major equipments and machineries, process flow sheet (quantitative) from raw material to products to be provided.
3.7	Hazard identification and details of proposed safety systems.

4. Site Details

Sr. No.	Terms of Reference
4.1	Location of the project site covering village, Taluka/Tehsil, District and State, Justification forselecting the site, whether other sites were considered.
4.2	A toposheet of the study area of radius of 10 km and site location on 1:50,000/1:25,000 scale on an A3/A2 sheet. (including all eco-sensitive areas and environmentally sensitive places)
4.3	Co-ordinates (lat-long) of all four corners of the site. Google map-Earth downloaded of the project site. Layout maps indicating existing unit as well as proposed unit indicating storage area, plant area, greenbelt area, utilities etc. If located within an Industrial area/Estate/Complex, layout of Industrial Area indicating location of unit within the Industrial area/Estate.
4.4	Photographs of the proposed and existing (if applicable) plant site. If existing, show photographs of plantation/greenbelt, in particular.
4.5	Land use break-up of total land of the project site (identified and acquired), government/ private - agricultural, forest, wasteland, water bodies, settlements, etc shall be included. (not required for industrial area).
4.6	A list of major industries with name and type within study area (10km radius) shall be incorporated.
4.7	Details of Drainage of the project up to 5km radius of study area. If the site is within 1 km radius of any

Sr. No.	Terms of Reference
	major river, peak and lean season river discharge as well as flood occurrence frequency based on peak rainfall data of the past 30 years. Details of Flood Level of the project site and maximum Flood Level of the river shall also be provided.
4.8	Status of acquisition of land. If acquisition is not complete, stage of the acquisition process and expected time of complete possession of the land.
4.9	R&R details in respect of land in line with state Government policy.

5. Forest and wildlife related issues (if applicable):

Sr. No.	Terms of Reference
5.1	Permission and approval for the use of forest land (forestry clearance), if any, and recommendations of the State Forest Department. (if applicable)
5.2	Land use map based on High resolution satellite imagery (GPS) of the proposed site delineating the forestland (in case of projects involving forest land more than 40 ha).
5.3	Status of Application submitted for obtaining the stage I forestry clearance along with latest status shall be submitted.
5.4	The projects to be located within 10 km of the National Parks, Sanctuaries, Biosphere Reserves, Migratory Corridors of Wild Animals, the project proponent shall submit the map duly authenticated by Chief Wildlife Warden showing these features vis-à-vis the project location and the recommendations or comments of the Chief Wildlife Warden-thereon
5.5	Wildlife Conservation Plan duly authenticated by the Chief Wildlife Warden of the State Government for conservation of Schedule I fauna, if any exists in the study area
5.6	Copy of application submitted for clearance under the Wildlife (Protection) Act, 1972, to the Standing Committee of the National Board for Wildlife.

6. Environmental Status

Sr. No.	Terms of Reference
6.1	Determination of atmospheric inversion level at the project site and site-specific micrometeorological data using temperature, relative humidity, hourly wind speed and direction and rainfall.
6.2	AAQ data (except monsoon) at 8 locations for PM10, PM2.5, SO2, NOX, CO and other parameters relevant to the project shall be collected. The monitoring stations shall be based CPCB guidelines and take into account the pre-dominant wind direction, population zone and sensitive receptors including reserved forests.
6.3	Raw data of all AAQ measurement for 12 weeks of all stations as per frequency given in the NAQQM Notification of Nov. 2009 along with - min., max., average and 98% values for each of the AAQ parameters from data of all AAQ stations should be provided as an annexure to the EIA Report.

Sr. No.	Terms of Reference
6.4	Surface water quality of nearby River (100m upstream and downstream of discharge point) and other surface drains at eight locations as per CPCB/MoEF&CC guidelines.
6.5	Whether the site falls near to polluted stretch of river identified by the CPCB/MoEF&CC, if yes give details.
6.6	Ground water monitoring at minimum at 8 locations shall be included.
6.7	Noise levels monitoring at 8 locations within the study area.
6.8	Soil Characteristic as per CPCB guidelines.
6.9	Traffic study of the area, type of vehicles, frequency of vehicles for transportation of materials, additional traffic due to proposed project, parking arrangement etc. Impact due to increased traffic shall be assessed and incorporated in environmental management plan. Buffer zone of 50.0 m from centre of state highway shall be maintained.
6.10	Detailed description of flora and fauna (terrestrial and aquatic) existing in the study area shall be given with special reference to rare, endemic and endangered species. If Schedule- I fauna are found within the study area, a Wildlife Conservation Plan shall be prepared and furnished.
6.11	Socio-economic status of the study area.

7. Impact and Environment Management Plan

Sr. No.	Terms of Reference
7.1	Assessment of ground level concentration of pollutants from the stack emission based on site specific meteorological features. In case the project is located on a hilly terrain, the AQIP Modeling shall be done using inputs of the specific terrain characteristics for determining the potential impacts of the project on the AAQ. Cumulative impact of all sources of emissions (including transportation) on the AAQ of the area shall be assessed. Details of the model used and the input data used for modeling shall also be provided. The air quality contours shall be plotted on a location map showing the location of project site, habitation nearby, sensitive receptors, if any.
7.2	Water Quality modeling - in case of discharge in water body
7.3	Impact of the transport of the raw materials and end products on the surrounding environment shall be assessed and provided. In this regard, options for transport of raw materials and finished products and wastes (large quantities) by rail or rail-cum road transport or conveyor cum- rail transport shall be examined.
7.4	A note on treatment of wastewater from different plant operations, extent recycled and reused for different purposes shall be included. Complete scheme of effluent treatment. Characteristics of untreated and treated effluent to meet the prescribed standards of discharge under E(P) Rules.
7.5	Details of stack emission and action plan for control of emissions to meet standards.
7.6	Measures for fugitive emission control

Sr. No.	Terms of Reference
7.7	Details of hazardous waste generation and their storage, utilization and management. Copies of MOU regarding utilization of solid and hazardous waste in cement plant shall also be included. EMP shall include the concept of waste-minimization, recycle/reuse/recover techniques, Energy conservation, and natural resource conservation.
7.8	Proper utilization of fly ash shall be ensured as per Fly Ash Notification, 2009. A detailed plan of action shall be provided.
7.9	Action plan for the green belt development plan as per IA3-22/14/2025-IA.III dated 29.10.2025 with not less than 2,500 trees per ha. mentioning details of species, width of plantation, planning schedule, density of the plantation etc. shall be included. At least 20 varieties of species shall be proposed as part of greenbelt. No invasive or alien or non-native tree species shall be selected for plantation. The green belt shall be around the project periphery and a scheme for greening of the roads used for the project shall also be incorporated.
7.10	Action plan for rainwater harvesting measures at plant site shall be submitted to harvest rainwater from the roof tops and storm water drains to recharge the ground water and also to use for the various activities at the project site to conserve fresh water and reduce the water requirement from other sources. Industry shall construct a rain water storage pond and the accumulated water to be used as fresh water thereby reducing fresh water consumption. Dimensions of rain water storage pond/tank proposed shall be given.

8. Occupational health

Sr. No.	Terms of Reference
8.1	Plan and fund allocation to ensure the occupational health & safety of all contract and casual workers.
8.2	Details of exposure specific health status evaluation of worker. If the workers' health is being evaluated by pre designed format, chest x rays, Audiometry, Spirometry, Vision testing (Far & Near vision, colour vision and any other ocular defect) ECG, during pre placement and periodical examinations give the details of the same. Details regarding last month analyzed data of above mentioned parameters as per age, sex, duration of exposure and department wise.
8.3	Details of existing Occupational & Safety Hazards. What are the exposure levels of hazards and whether they are within Permissible Exposure level (PEL). If these are not within PEL, what measures the company has adopted to keep them within PEL so that health of the workers can be preserved.
8.4	Annual report of heath status of workers with special reference to Occupational Health and Safety.

9. Corporate Environment Policy

Sr. No.	Terms of Reference
9.1	Does the company have a well laid down Environment Policy approved by its Board of Directors? If so, it may be detailed in the EIA report.
9.2	What is the hierarchical system or Administrative order of the company to deal with the environmental issues and for ensuring compliance with the environmental clearance conditions? Details of this system may be given.

Sr. No.	Terms of Reference
9.3	Does the company have system of reporting of non compliances / violations of environmental norms to the Board of Directors of the company and / or shareholders or stakeholders at large? This reporting mechanism shall be detailed in the EIA report.

10. Details regarding infrastructure facilities such as sanitation, fuel, restroom etc. to be provided to the labour force during construction as well as to the casual workers including truck drivers during operation phase.

11. Enterprise Social Committment (ESC)

Sr. No.	Terms of Reference
11.1	As per Ministry's OM No. 22-65/2017-IA.III dated 30.09.2020 PP shall address Public Hearing issues and submit item-wise details along with time bound action plan which shall be included in the Environmental Management Plan in lieu of Corporate Environment Responsibility. Socio-economic development activities need to be elaborated upon.
11.2	Any litigation pending against the project and/or any direction/order passed by any Court of Law against the project, if so, details thereof shall also be included. Has the unit received any notice under the Section 5 of Environment (Protection) Act, 1986 or relevant Sections of Air and Water Acts? If so, details there of and compliance/ATR to the notice(s) and present status of the case.
11.3	A tabular chart with index for point wise compliance of above TOR.

12. Specific Conditions

Sr. No.	Terms of Reference
12.1	List of existing distillery units in the study area along with their capacity and sourcing of raw material.
12.2	Number of working days of the distillery unit.
12.3	Details of raw materials such as molasses/grains, their source with availability.
12.4	Details of the use of steam from the boiler.
12.5	Surface and Ground water quality around proposed spent wash storage lagoon, and compost yard.
12.6	Plan to reduce spent wash generation within 6-8 KL/KL of alcohol produced.
12.7	Proposed Effluent treatment system for molasses/grain based distillery (spent wash, spent lees, condensate and utilities) as well as domestic sewage and scheme for achieving zero water conservation.
12.8	Proposed action to restrict fresh water consumption within 10 KL/KL of alcohol production.
12.9	Details about capacity of spent wash holding tank, material used, design consideration. No. of peizometers to be proposed around spent wash holding tank.
12.10	Details of solid waste management including management of boiler ash, yeast, etc. Details of incinerated spent wash ash generation and its disposal.

Sr. No.	Terms of Reference
12.11	Details of bio-composting yard (if applicable).
12.12	Action plan to control odour pollution.
12.13	Arrangements for installation of continuous online monitoring system (24x7 monitoringdevice)
12.14	If Sugar and distillery will have integrated effluent treatment facilities. Details regarding the same.

Standard Terms of Reference for conducting Environment Impact Assessment Study for Thermal Power Plants and information to be included in EIA/EMP report

1. Statutory compliance

Sr. No.	Terms of Reference
1.1	The proposed project shall be given a unique name in consonance with the name submitted to other Government Departments etc. for its better identification and reference.
1.2	Vision document specifying prospective long term plan of the project shall be formulated and submitted.
1.3	Latest compliance report duly certified by the Regional Office of MoEF&CC for the conditions stipulated in the environmental and CRZ clearances of the previous phase(s) for the expansion projects shall be submitted.

2. Details of the Project and Site

Sr. No.	Terms of Reference
2.1	The project proponent needs to identify minimum three potential sites based on environmental, ecological and economic considerations, and choose one appropriate site having minimum impacts on ecology and environment. A detailed comparison of the sites in this regard shall be submitted.
2.2	Executive summary of the project indicating relevant details along with recent photographs of the proposed site (s) shall be provided. Response to the issues raised during Public Hearing and the written representations (if any), along with a time bound Action Plan and budgetary allocations to address the same, shall be provided in a tabular form, against each action proposed.
2.3	Harnessing solar power within the premises of the plant particularly at available roof tops and other available areas shall be formulated and for expansion projects, status of implementation shall also be submitted.

Sr. No.	Terms of Reference
2.4	The geographical coordinates (WGS 84) of the proposed site (plant boundary), including location of ash pond along with topo sheet (1:50,000 scale) and IRS satellite map of the area, shall be submitted. Elevation of plant site and ash pond with respect to HFL of water body/nallah/River and high tide level from the sea shall be specified, if the site is located in proximity to them.
2.5	Layout plan indicating break-up of plant area, ash pond, green belt, infrastructure, roads etc. shall be provided.
2.6	Land requirement for the project shall be optimized and in any case not more than what has been specified by CEA from time to time. Item wise break up of land requirement shall be provided.
2.7	Present land use (including land class/kism) as per the revenue records and State Govt. records of the proposed site shall be furnished. Information on land to be acquired including coal transportation system, laying of pipeline, ROW, transmission lines etc. shall be specifically submitted. Status of land acquisition and litigation, if any, should be provided.
2.8	If the project involves forest land, details of application, including date of application, area applied for, and application registration number, for diversion under FCA and its status should be provided along with copies of relevant documents.
2.9	The land acquisition and R&R scheme with a time bound Action Plan should be formulated and addressed in the EIA report.
2.10	Satellite imagery and authenticated topo sheet indicating drainage, cropping pattern, water bodies (wetland, river system, stream, nallahs, ponds etc.), location of nearest habitations (villages), creeks, mangroves, rivers, reservoirs etc. in the study area shall be provided.
2.11	Topography of the study area supported by toposheet on 1:50,000 scale of Survey of India, along with a large scale map preferably of 1:25,000 scale and the specific information whether the site requires any filling shall be provided. In that case, details of filling, quantity of required fill material; its source, transportation etc. shall be submitted.

3. Ecology biodiversity and Environment

Sr. No.	Terms of Reference
3.1	A detailed study on land use pattern in the study area shall be carried out including identification of common property resources (such as grazing and community land, water resources etc.) available and Action Plan for its protection and management shall be formulated. If acquisition of grazing land is involved, it shall be ensured that an equal area of grazing land be acquired and developed and detailed plan submitted.
3.2	Location of any National Park, Sanctuary, Elephant/Tiger Reserve (existing as well as

Sr. No.	Terms of Reference
	proposed), migratory routes / wildlife corridor, if any, within 10 km of the project site shall be specified and marked on the map duly authenticated by the Chief Wildlife Warden of the State or an officer authorized by him.
3.3	A mineralogical map of the proposed site (including soil type) and information (if available) that the site is not located on potentially mineable mineral deposit shall be submitted.
3.4	The water requirement shall be optimized (by adopting measures such as dry fly ash and dry bottom ash disposal system, air cooled condenser, concept of zero discharge) and in any case not more than that stipulated by CEA from time to time, to be submitted along with details of source of water and water balance diagram. Details of water balance calculated shall take into account reuse and re- circulation of effluents.
3.5	Water body/Nallah (if any) passing across the site should not be disturbed as far as possible. In case any Nallah / drain is proposed to be diverted, it shall be ensured that the diversion does not disturb the natural drainage pattern of the area. Details of proposed diversion shall be furnished duly approved by the concerned Department of the State.
3.6	It shall also be ensured that a minimum of 500 m distance of plant boundary is kept from the HFL of river system / streams etc. and the boundary of site should also be located 500 m away from railway track and National Highways.
3.7	Hydro-geological study of the area shall be carried out through an institute/ organization of repute to assess the impact on ground and surface water regimes. Specific mitigation measures shall be spelt out and time bound Action Plan for its implementation shall be submitted
3.8	Detailed Studies on the impacts of the ecology including fisheries of the River/Estuary/Sea due to the proposed withdrawal of water / discharge of treated wastewater into the River/Sea etc shall be carried out and submitted along with the EIA Report. In case of requirement of marine impact assessment study, the location of intake and outfall shall be clearly specified along with depth of water drawl and discharge into open sea.
3.9	Source of water and its sustainability even in lean season shall be provided along with details of ecological impacts arising out of withdrawal of water and taking into account inter-state shares (if any). Information on other competing sources downstream of the proposed project and commitment regarding availability of requisite quantity of water from the Competent Authority shall be provided along with letter / document stating firm allocation of water.
3.10	Detailed plan for rainwater harvesting and its proposed utilization in the plant shall be furnished.In addition, wherever ground water is drawn, PP shall submit detailed plan of Water charging activity to be undertaken.
3.11	Feasibility of near zero discharge concept shall be critically examined and its details submitted.

Sr. No.	Terms of Reference
3.12	Optimization of Cycles of Concentration (COC) along with other water conservation measures in the project shall be specified.
3.13	Plan for recirculation of ash pond water and its implementation shall be submitted.
3.14	Detailed plan for conducting monitoring of water quality regularly with proper maintenance of records shall be formulated. Detail of methodology and identification of monitoring points (between the plant and drainage in the direction of flow of surface / ground water) shall be submitted. It shall be ensured that parameter to be monitored also include heavy metals. A provision for long-term monitoring of ground water table using Piezometer shall be incorporated in EIA, particularly from the study area.
3.15	Hazards Characterization: Past incidents of hazard events within 10km radius of project area with detailed analysis of causes and probability of reoccurrence

4. Environmental Baseline study and mitigation measures

Sr. No.	Terms of Reference
4.1	One complete season (critical season) site specific meteorological and AAQ data (except monsoon season) as per latest MoEF&CC Notification shall be collected along with past three year's meteorological data for that particular season for wins speed analysisand the dates of monitoring shall be recorded. The parameters to be covered for AAQ shall include PM10, PM2.5, SO2, NOx, CO and Hg. The location of the monitoring stations should be so decided so as to take into consideration the upwind direction, pre-dominant downwind direction, other dominant directions, habitation and sensitive receptors. There should be at least one monitoring station each in the upwind and in the pre - dominant downwind direction at a location where maximum ground level concentration is likely to occur.
4.2	In case of expansion project, air quality monitoring data of 104 observations a year for relevant parameters at air quality monitoring stations as identified/stipulated shall be submitted to assess for compliance of AAQ Standards (annual average as well as 24 hrs).
4.3	A list of industries existing and proposed in the study area shall be furnished.
4.4	Cumulative impacts of all sources of emissions including handling and transportation of existing and proposed projects on the environment of the area shall be assessed in detail. Details of the Model used and the input data used for modelling shall also be provided. The air quality contours should be plotted on a location map showing the location of project site, habitation nearby, sensitive receptors, if any. The windrose and isopleths should also be shown on the location map. The cumulative study should also include impacts on water, soil and socio-economics.
4.5	Radio activity and heavy metal contents of coal to be sourced shall be examined and submitted along with laboratory reports.

Sr. No.	Terms of Reference
4.6	Fuel analysis shall be provided. Details of auxiliary fuel, if any, including its quantity, quality, storage etc should also be furnished.
4.7	Quantity of fuel required, its source and characteristics and documentary evidence to substantiate confirmed fuel linkage shall be furnished. The Ministry's Notification dated 02.01.2014 regarding ash content in coal shall be complied. For the expansion projects, the compliance of the existing units to the said Notification shall also be submitted
4.8	Details of transportation of fuel from the source (including port handling) to the proposed plant and its impact on ambient AAQ shall be suitably assessed and submitted. If transportation entails a long distance it shall be ensured that rail transportation to the site shall be first assessed. Wagon loading at source shall preferably be through silo/conveyor belt.
4.9	For proposals based on imported coal, inland transportation and port handling and rail movement shall be examined and details furnished. The approval of the Port and Rail Authorities shall be submitted.
4.10	Details regarding infrastructure facilities such as sanitation, fuel, restrooms, medical facilities, safety during construction phase etc. to be provided to the labour force during construction as well as to the casual workers including truck drivers during operation phase should be adequately catered for and details furnished.

5. Environmental Management Plan

Sr. No.	Terms of Reference
5.1	EMP to mitigate the adverse impacts due to the project along with item - wise cost of its implementation in a time bound manner shall be specified.
5.2	A Disaster Management Plan (DMP) along with risk assessment study including fire and explosion issues due to storage and use of fuel should be prepared. It should take into account the maximum inventory of storage at site at any point of time. The risk contours should be plotted on the plant layout map clearly showing which of the proposed activities would be affected in case of an accident taking place. Based on the same, proposed safeguard measures should be provided. Measures to guard against fire hazards should also be invariably provided. Provision for mock drills shall be suitably incorporated to check the efficiency of the plans drawn.
5.3	The DMP so formulated shall include measures against likely Fires/Tsunami/Cyclones/Storm Surges/ Earthquakes etc, as applicable. It shall be ensured that DMP consists of both On-site and Off-site plans, complete with details of containing likely disaster and shall specifically mention personnel identified for the task. Smaller version of the plan for different possible disasters shall be prepared both in English and local languages and circulated widely.
5.4	Details of fly ash utilization plan as per the latest fly ash Utilization Notification of GOI along

Sr. No.	Terms of Reference
	with firm agreements / MoU with contracting parties including other usages etc. shall be submitted. The plan shall also include disposal method / mechanism of bottom ash along with monitoring mechanism.

6. Green belt development

Sr. No.	Terms of Reference
6.1	Detailed scheme for raising green belt of native species of appropriate width (50 to 100 m) and consisting of at least 3 tiers around plant boundary not less than 2000 tree per ha with survival rate of more than 85%shall be submitted. Photographic evidence must be created and submitted periodically including NRSA reports in case of expansion projects. A shrub layer beneath tree layer would serve as an effective sieve for dust and sink for CO2 and other gaseous pollutants and hence a stratified green belt should be developed.
6.2	Over and above the green belt, as carbon sink, plan for additional plantation shall be drawn by identifying blocks of degraded forests, in close consultation with the District Forests Department. In pursuance to this the project proponent shall formulate time bound Action Plans along with financial allocation and shall submit status of implementation to the Ministry every six months

7. Socio-economic activities

Sr. No.	Terms of Reference
7.1	Socio-economic study of the study area comprising of 10 km from the plant site shall be carried out through a reputed institute / agency which shall consist of detail assessment of the impact on livelihood of the local communities.
7.2	Action Plan for identification of local employable youth for training in skills, relevant to the project, for eventual employment in the project itself shall be formulated and numbers specified during construction & operation phases of the Project.
7.3	If the area has tribal population, it shall be ensured that the rights of tribals are well protected. The project proponent shall accordingly identify tribal issues under various provisions of the law of the land.
7.4	A detailed CER plan along with activities wise break up of financial commitment shall be prepared in terms of the provisions OM No. 22-65/2017-IA.III dated 30.09.2020.CER component shall be identified considering need based assessment study and Public Hearing issues. Sustainable income generating measures which can help in upliftment of affected section of society, which is consistent with the traditional skills of the people shall be identified.
7.5	While formulating CER schemes it shall be ensured that an in-built monitoring mechanism for

Sr. No.	Terms of Reference
	the schemes identified are in place and mechanism for conducting annual social audit from the nearest government institute of repute in the region shall be prepared. The project proponent shall also provide Action Plan for the status of implementation of the scheme from time to time and dovetail the same with any Govt. scheme(s). CERdetails done in the past should be clearly spelt out in case of expansion projects.
7.6	R&R plan, as applicable, shall be formulated wherein mechanism for protecting the rights and livelihood of the people in the region who are likely to be impacted, is taken into consideration. R&R plan shall be formulated after a detailed census of population based on socio economic surveys who were dependant on land falling in the project, as well as, population who were dependant on land not owned by them.
7.7	Assessment of occupational health and endemic diseases of environmental origin in the study area shall be carried out and Action Plan to mitigate the same shall be prepared.
7.8	Occupational health and safety measures for the workers including identification of work related health hazards shall be formulated. The company shall engage full time qualified doctors who are trained in occupational health. Health monitoring of the workers shall be conducted at periodic intervals and health records maintained. Awareness programme for workers due to likely adverse impact on their health due to working in non-conducive environment shall be carried out and precautionary measures like use of personal equipments etc. shall be provided. Review of impact of various health measures undertaken at intervals of two to three years shall be conducted with an excellent follow up plan of action wherever required.

8. Corporate Environment Policy

Sr. No.	Terms of Reference
8.1	Does the company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be detailed in the EIA report.
8.2	Does the Environment Policy prescribe for standard operating process / procedures to bring into focus any infringement / deviation / violation of the environmental or forest norms / conditions? If so, it may be detailed in the EIA.
8.3	What is the hierarchical system or Administrative order of the company to deal with the environmental issues and for ensuring compliance with the environmental clearance conditions. Details of this system may be given.
8.4	Does the company has compliance management system in place wherein compliance status along with compliances / violations of environmental norms are reported to the CMD and the Board of Directors of the company and / or shareholders or stakeholders at large? This reporting mechanism should be detailed in the EIA report.

9. Miscellaneous

Sr. No.	Terms of Reference
9.1	All the above details should be adequately brought out in the EIA report and in the presentation to the Committee.
9.2	Details of litigation pending or otherwise with respect to project in any Court, Tribunal etc. shall invariably be furnished.
9.3	In case any dismantling of old plants are envisaged, the planned land use & land reclamation of dismantled area to be furnished.

10. Additional TOR for Coastal Based Thermal Power Plants Projects (TPPs)

Sr. No.	Terms of Reference
10.1	Low lying areas fulfilling the definition wetland as per Ramsar Convention shall be identified and clearly demarcated w.r.t the proposed site.
10.2	If the site includes or is located close to marshy areas and backwaters, these areas must be excluded from the site and the project boundary should be away from the CRZ line. Authenticated CRZ map from any of the authorized agencies shall be submitted.
10.3	The soil levelling should be minimum with no or minimal disturbance to the natural drainage of the area. If the minor canals (if any) have to be diverted, the design for diversion should be such that the diverted canals not only drains the plant area but also collect the volume of flood water from the surrounding areas and discharge into marshy areas/major canals that enter into creek. Major canals should not be altered but their embankments should be strengthened and desilted.
10.4	Additional soil required for levelling of the sites should as far as possible be generated within the site itself in such a manner that the natural drainage system of the area is protected and improved.
10.5	Marshy areas which hold large quantities of flood water to be identified and shall not be disturbed.
10.6	No waste should be discharged into Creek, Canal systems, Backwaters, Marshy areas and seas without appropriate treatment. Wherever feasible, the outfall should be first treated in a Guard Pond and then only discharged into deep sea (10 to 15 m depth). Similarly, the Intake should be from deep sea to avoid aggregation of fish and in no case shall be from the estuarine zone. The brine that comes out from Desalinization Plants (if any) should not be discharged into sea without adequate dilution.
10.7	Mangrove conservation and regeneration plan shall be formulated and Action Plan with details of time bound implementation shall be specified, if mangroves are present in Study Area.

Sr. No.	Terms of Reference
10.8	A common Green Endowment Fund should be created by the project proponents out of EMP budgets. The interest earned out of it should be used for the development and management of green cover of the area.
10.9	Impact on fisheries at various socio economic level shall be assessed.
10.10	An endowment Fishermen Welfare Fund should be created out of CER grants not only to enhance their quality of life by creation of facilities for Fish Landing Platforms / Fishing Harbour / cold storage, but also to provide relief in case of emergency situations such as missing of fishermen on duty due to rough seas, tropical cyclones and storms etc.
10.11	Tsunami Emergency Management Plan shall be prepared wherever applicable and Plan submitted prior to the commencement of construction work.
10.12	There should not be any contamination of soil, ground and surface waters (canals & village pond) with sea water in and around the project sites. In other words necessary preventive measures for spillage from pipelines, such as lining of Guard Pond used for the treatment of outfall before discharging into the sea and surface RCC channels along the pipelines of outfall and intake should be adopted. This is just because the areas around the projects boundaries could be fertile agricultural land used for paddy cultivation.

Additional Terms of Reference

1. Risk assessment study shall be carried out of hazardous chemical storage. Location of alcohol bulk storage tanks shall be placed in such a way that in the event of any fire, accident, explosion or any unforeseen conditions the impact of such event should not go beyond the boundary of the plant i.e., the risk should be tolerable (acceptable) at the boundary.

2. Industry shall determine the distance of fire hydrant while finalizing its location from ethanol storage tanks or any other hazardous storage substance shall be based on dispersion of Thermal Radiation so that during any unforeseen situation fire hydrant is always available to operate manually.

3. EIA/EMP report shall include details such as (i) Details of advertisements for Public Hearing (ii) Copy of forwarding letter of SPCB to MoEF&CC (iii) Legible copy of public hearing proceedings duly signed by the presiding officer (iv) Attendance sheets (v) Action plan to address the issues raised during public along with budget allocation and time line. (vi) Copy of written grievances/submissions if any. If the Public Hearing is in the regional language, an authenticated English Translation of the same should be provided from SPCB.

4. Total Fresh water requirement during off season shall not exceed 4 kL per kL of alcohol produced.

5. Industry shall conduct comprehensive soil testing of the project site and submit a detailed report covering Physical parameters, Chemical parameters, Macro-nutrients and Micro-nutrients. Where deficiencies are identified, Industry shall prepare a soil enrichment plan tailored to the proposed plant species. The existing greenbelt shall be geo-tagged with precise GPS coordinates along with drone-based aerial photography and videography covering the full extent of the greenbelt plantation.

6. Adequate buffer needs to be maintained from the railway track. The layout shall be reorineted such way that inflammable and explosive infrastructure of distillery needs to waway from the railway track.

7. Impacts caused on the surrounding reserve forest due to the proposed project need to be reported and approporiate mitigation measures shall be proposed,

Annexure 2

Details of Products & By-products

Name of the product /By-product	Product / By-product	Quantity	Unit	Mode of Transport / Transmission	Remarks (eg. CAS number)
Co-generation	Product	13	Mega Watt (MW)	Power grids	NA
Ethanol/ENA	Product	600	Kilo Litre per Day (KLD)	Road	NA
DDGS	By-Product	300	TPD	Road	NA
CO2	By-Product	150	TPD	Road	NA

Signature Not Verified

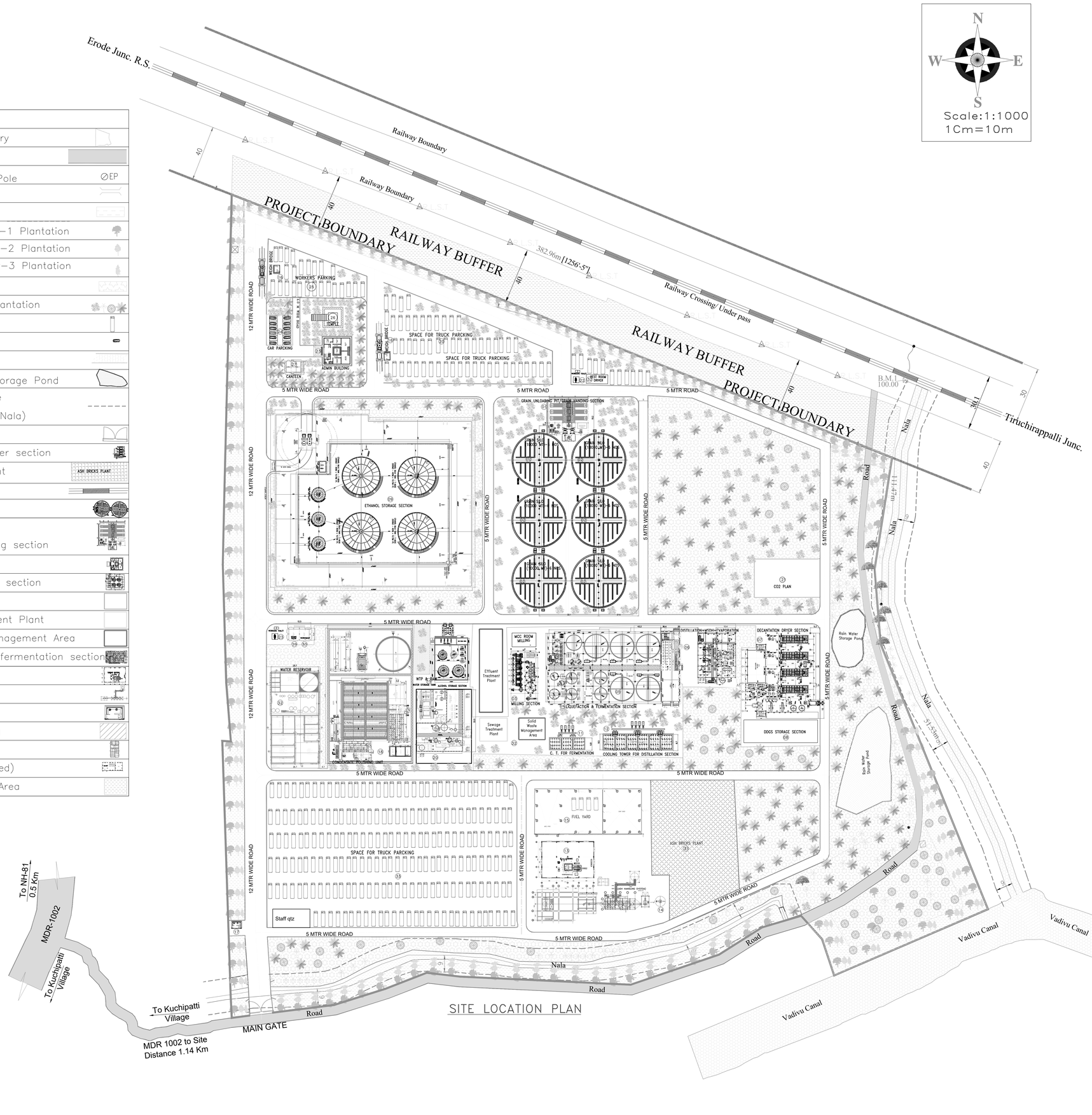
Digitally Signed by : Dr Vimal Kumar Hatwal
Member Secretary, MoEFCC (EC)

Date: 16/02/2026

ANNEXURE-2

INDEX

Project Boundary	
Road	
11KV Electric Pole	∅EP
Bridge	
Green belt	
Green Belt Tier–1 Plantation	
Green Belt Tier–2 Plantation	
Green Belt Tier–3 Plantation	
Green Cover	
Green Cover Plantation	
Truck parking	
Car parking	
Nala	
Rain Water Storage Pond	
Nala Buffer LIne (9 Meter From Nala)	
Gate	
Decantation dryer section	
ASH Bricks plant	ASH BRICKS PLANT
Railway Track	
Grain silo	
Grain unloading pit/grain handing section	
Admin building	
Ethanol storage section	
CO_2 Plant	
Sewage Treatment Plant	
Solid Waste Management Area	
Liquefaction & fermentation section	
Turbine section	
Boiler house	
Security cabin	
Workers parking	
Water reservoir	
(Rice husk shed)	
Railway Buffer Area	



SITE LOCATION PLAN

LEGEND

SR. NO.	DESCRIPTION	Area in SQM
1	GRAIN UNLOADING PIT/GRAIN HANDING SECTION	785.3315
2	GRAIN SILO (10000MT) – 6 NOS.	1166.2213
3	CLEANING & MILLING	2279.7982
4	LIQUEFACTION & FERMENTATION SECTION	3376.8163
5	MCC ROOM FOR FERMENTATION SECTION	2189.5472
6	DISTILLATION+MSDH+EVAPORATION	895.9425
7	DECANTATION AND DRYER	2042.0303
8	DDGS STORAGE SECTION	489.681
9	ETHANOL STORAGE SECTION	6422.3821
10	ALCOHOL STORAGE SECTION	851.1197
11	COOLING TOWER FOR FERMENTATION	498.5038
12	COOLING TOWER FOR DISTILLATION SECTION	841.0075
13	BOILER HOUSE + AUXILIARIES	2255.2092
14	CHIMNEY FOR BOILER	
15	FUEL YARD	3681.4498
16	WEIGH BRIDGE–2 NOS	120.3157
17	SECURITY CABIN	22.0146
18	CONDENSATE POLISHING UNIT	2693.0054
19	WTP & RAW WATER STORAGE TANK	1262.4565
20	SPACE FOR TRUCK PARCKING	1454.6737
21	CO2 PLAN	706.5593
22	WORKERS TOILET x 2 NOS.	36.8568
23	ADMIN BUILDING	273.998
24	CAR PARCKING	233.5416
25	WORKERS PARKING	2167.4755
26	TEMPLE	203.5452
27	CANTEEN	90.0733
28	STORE ROOM	165.7706
29	WORKSHOP	
30	DRIVER REST ROOM	48.9865
31	ASH BRICKS PLANT	2698.4359
32	WATER RESERVOIR, ETP, STP & SWM AREA	1410.8215
33	SPACE FOR TRUCK PARCKING	6180.0415
	Total Area	47,543.5485

NOTES–

1) ALL DIMENSIONS ARE IN MM.
2) THIS DRAWING IS PRELIMINARY AND MAY CHANGE DURING DETAILED ENGINEERING.

Area Statement

Description	Acres	Ha	Sq. m.	%
Plant area	11.75	4.75	47543.91	35.23
Greenbelt	11.55	4.67	46749.91	34.64
Road	4.34	1.76	17563.74	13.01
Parking	3.114	1.26	12604.48	9.34
Open	0.615	0.25	2486.87	1.84
Railway Buffer Area (Vacant area)	1.981	0.80	8017.19	5.94
Total	**33.35**	**13.50**	**134966.10**	**100.00**

REV. NO.	DESCRIPTION	DRAWN	CHKD.	APPD.	DATE

REGREEN-EXCEL EPC INDIA LIMITED
OFFICE NO 507 & 508 S.NO. 23 P.NANDAN PROBIZ, PUNE CITY, BANER GAON, PUNE,HAVELI, MAHARASHTRA, INDIA, 411045

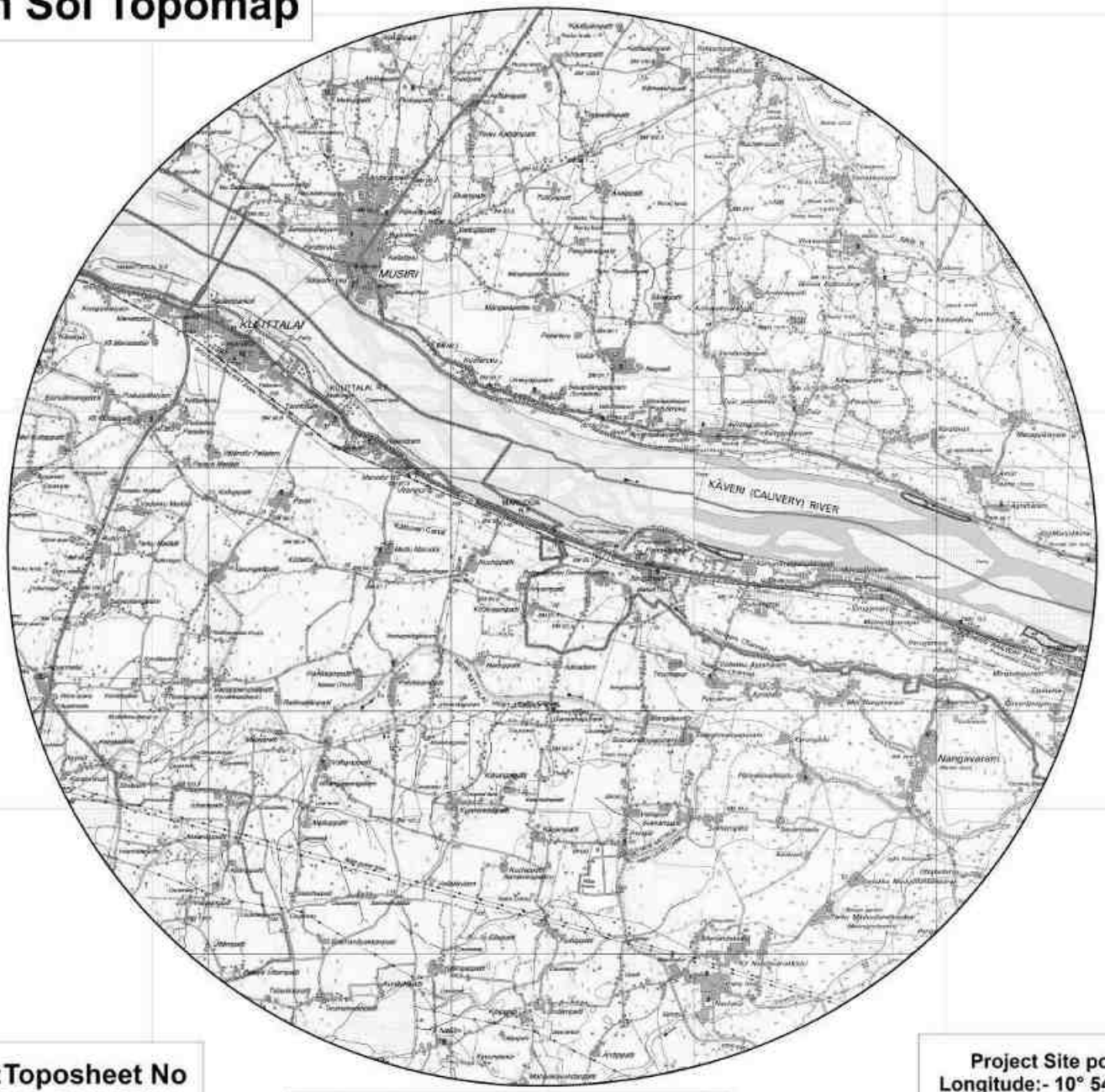
CLIENT :
PLANT :
LOCATION :

TITLE :

EXCEL JOB CODE 8
CAD FILE NAME 9

A0 | DWG. NO. 4 | REV. 5 | SHEET 6 OF 7 | SCALE 10

10Km Sol Topomap



78°24'25"E 78°28'30"E 78°32'35"E

10°59'40"N 10°55'35"N 10°51'30"N

N
1:50,000

2 1 0 2 4 6 Km

Legend

- Project SIte
- Project Boundary
- 10 KM Study Area

10 Km Sol Topomap

RGB

- Red: Band_1
- Green: Band_2
- Blue: Band_3

Source:Toposheet No 58J5 ,58J9,58I8,58I12

Project Site position:
Longitude:- 10° 54' 9.510" N
Latitude:- 78° 28' 31.025" E

PREPARED BY:

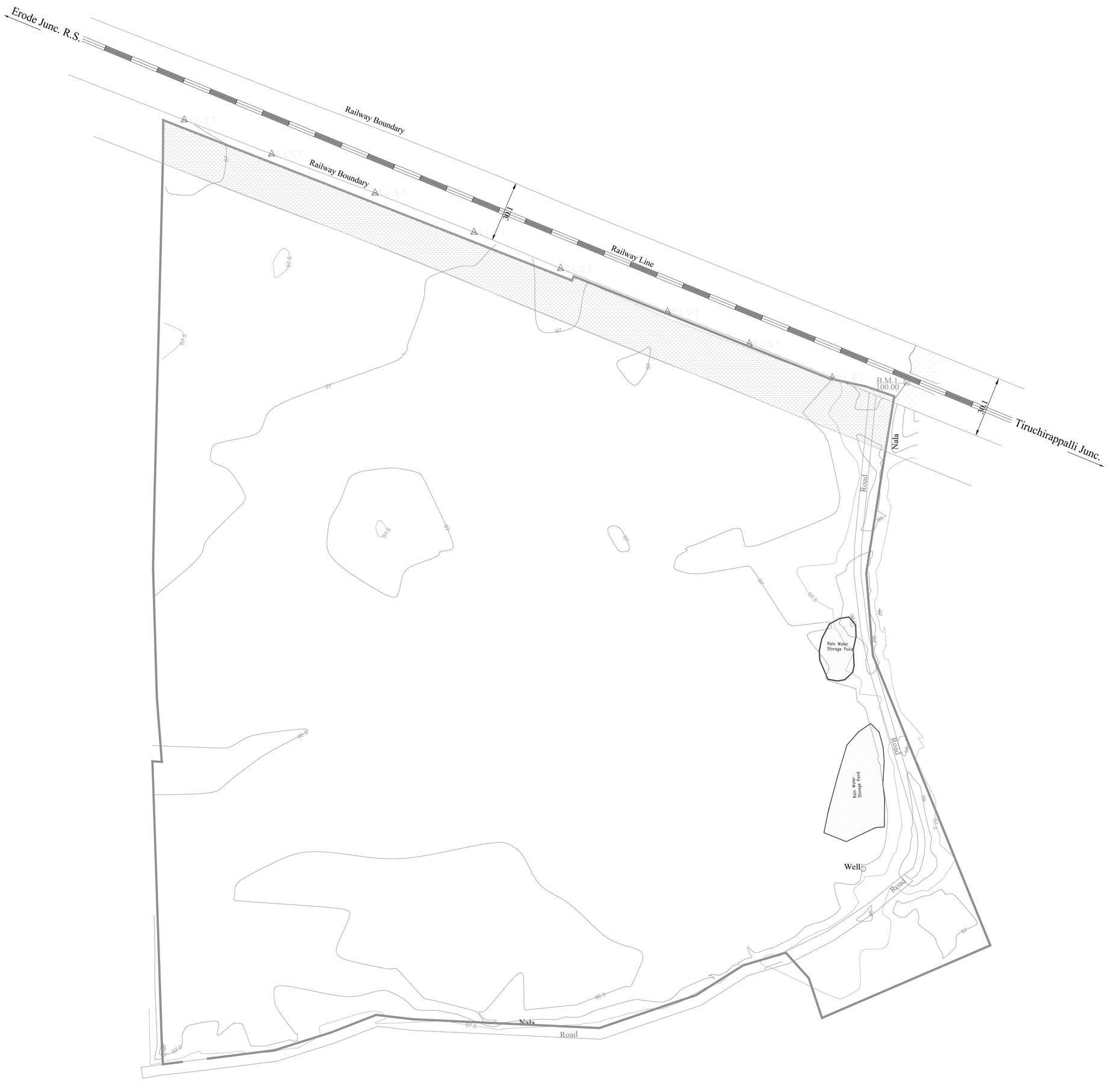
EHSC
ENVIRONMENTAL HEALTH AND SAFETY CONSULTANTS PVT. LTD.

[QCI-NABET Accredited & ISO 9001:2015 Certified Organization], No.174, 14th 'E' Cross, Agrahara Dasaralli, Rajajinagar Bangalore - 560 010.
Tele: 080-23016200. Fax: 080 23012111
:mail:ehscblr@yahoo.com/ehscblr1974@gmail.co
Web: www.ehsc.in

ANNEXURE-3

Village:- **KUMARAMANGALAM** Taluk:- **KULITALAI** District:- **TIRUCHIRAPPALLI**

CONTOUR DRAWING



N

W E

S

Scale:1:1000
1Cm=10m

Sy Nos	AREA STATEMENT		
61,63,64,65, 67,68,69,70, 72,172	Area		
	(A-G)	Sqmts	Sqft
Block - 1	1A-5.28G	4581.64	49316.38
Block - 2	34A-1.55G	137753.37	1482765.00
Total	**35A-6.83G**	**142335.01**	**1532081.38**

Note :-

1. GRID COORDINATES ARE ASSUMED ARBITRARY AS NORTHING 6000.00M, EASTING 5000.00M
2. ALL LEVELS ARE WITH RESPECT BM–1 ASSUMED VALUE–100.00M
3. ALL DIMENSIONS ARE IN METERS AND FEET.

INDEX

Property Boundary	
Road	**Road**
11KV Electric Pole	⊘EP
Existing Culvert	
Borewell	BW
Bench Mark	⊠ B.M
Railway Stone	
Nala & Flow Direction	
Well	
Block Levels 5m X 5m	103.166
Contour Major	100.5
Contour Minor	100.0

TITLE :-

TOPOGRAPHICAL SITE SURVEY OF SY NO. 61,63,64 65.67.68.69.70.72. AND 172, AT KUMARAMANGALAM VILLAGE, KULITALAI TALUK, TIRUCHIRAPPALLI DISTRICT.

OWNER NAME:-

GREENERGY PURE ETHANOL

SURVEY & MAPPING

PRADU SURVEYS

Flat No.502, Block-3, Phase-1, Kommagatta
BDA Appartment, Kengeri-60, India
Mob: 9880969914
E-mail : satishsurvey2002@gmail.com

F-1

ANNEXURE-4

GREENERGY PURE ETHANOL PRIVATE LIMITED

Regd. Off: No.324, Golden Point 4, Off. Queens Road Cross, Vasant Nagar, Bengaluru 560052, KA, IN
Ph: 080- 49222222 II **Email:** cs@goldengrp.co.in II **CIN:** U24200KA2022PTC163272

GPEPL/TN/LTR-04/NOC/24-25 **Date: 17-09-2024**

To,
The President,
Kumaramangalam Village,
Kulithalai Taluk,
Karur Dist.

Sub.: Request of NOC to construct the Ethanol factory at Kumara Mangalam Village – Kulithalai Tehsil-Karur District, Tamilnadu. – Reg.,

Dear Sir,

We are having our own land of 35 acres at Kumara Mangalam Village, Kulithalai Tehsil – Karur District vide Survey Numbers – 61, 63, 64, 65, 67, 68, 69/1, 2, 70/1, 2, 72/2 and in that we are planning to construct a Zero discharge Pure Ethanol Plant of 600KLPD. We had designed our plant as a Eco-Friendly plant and we use the Agri.-products (Rice & Maize) as the raw materials.

For the same we have made the payment of Rs. 15 Lakhs in the Tamil Nadu Government Single Window Portal (Copy attached) Ref. CAF : 153772, Dtd.: 20-06-2024

From this we are planning to provide local employment for 600 - 800 peoples here and the plant will generate revenue of more than 100 Cr. (GST Collection) per year to the government. Apart from that there will be a huge foreign exchange savings on crude imports. The total investment planned for this project is approx..600 Cr.

In this connection we are in need of a NOC to construct the factory at the said premises as there was a small canal running in the East side of the land (East to South direction) and in the South side of the land (South to west direction).

We request you to kindly issue us the NOC for constructing the above plant. We undertake to follow all the guidelines and directions issued by your office in this regard. And we agree to maintain the river as per Govt. Guidelines.

We seek your support in this matter please.

Recieved copy.

Thanking You,

Your's faithfully,

குமாரமங்கலம் ஊராட்சி
குளித்தலை ஒன்றியம்

18/09/2024
தலைவர் / செயல் அலுவலர்
குமாரமங்கலம் ஊராட்சி
குளித்தலை ஊராட்சி ஒன்றியம்

For Greenergy Pure Ethanol Pvt. Ltd.

Authorised Signatory

ANNEXURE-5

SOUTHERN RAILWAY

SA/W.280/Land/Vol.III

Divisional Railway Manager's Office
Works Branch, Salem
Date: 15.05.2025

The Tahsildar,
Kulithalai taluk office,
Kulithalai.

Sub: Issuing of NOC for the proposed construction of 6000 TCD crushing unit, 600 KLD multi feed (Cane syrup, molasses grain based) Distillery unit and 13 MW Co-generation unit at SF.No.61, 63/1&2,64/1&2, 65/2,3A&3B, 68/1A1, 1A2, 1B1, 1B2, &2, 69/1&2, 70/1&2, 72/2 of Kumaramangalam Village, Kulithalai taluk, Karur dist, Tamilnadu in favour of the M/s.Greenergy Pure Ethanol Private Limited, Bangalore. - reg

Ref: (i) The Tahsildar, Kulithalai Lr.No. A1/4062/2024. dt.21.04.2025
(ii) M/s. Greenergy Pure Ethanol Pvt.ltd Lr.No.GPEPL/TN/LTR-08/RB-NOC/24-25 Dt.3.03.2025

With reference to above, it is informed that, the proposals should be forwarded from Plant clearance/Approval authority of consign department with relevant records. i.e Proposed plant plan (clearly mentioned the details of within 30m from Railway boundary), land ownership documents.

The above said may be furnished early and for processing further.

Divisional Engineer/Central
Southern Railway/Salem
मंडल इंजीनियर/केंद्रीय
DIVISIONAL ENGINEER/CENTRAL
दक्षिण रेलवे, सेलम
SOUTHERN RAILWAY, SALEM

Copy:
M/s. Greenergy Pure Ethanol Private Limited, Bangalore.

ANNEXURE-6

C.No. 886/2025 D

O/o District Forest Officer,
Karur Forest Division,
Karur.
Dated: 07.07.2025.

Sub : Karur District – Distance of the nearby Reserved Forest from the project site of the Ethanol production industry by M/s Greenergy Pure Ethanol Pvt. Ltd. located at Kumaramangalam Village, Kulithalai Taluk, Karur District, Tamil Nadu – Regarding.

Ref : 1. M/s Greenergy Pure Ethanol Pvt. Ltd. Vasanthnagar, Bangalore letter No GPEPL/TN/LTR 09/RF-NOC/24-25 Dated: 03.03.2025.
2. The Forest Range Officer, Karur Range, Karur Ref.No.162/2025 Dated: 03.06.2025.

*****

With reference to the above, the M/s Greenergy Pure Ethanol Private Limited has proposed for establishment of 600 KLD Grain based Distillery Unit and 13 MW Co-generation Unit at S.F.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 and 72/2 of Kumaramangalam Village, Kulithalai Taluk, Karur District, Tamil Nadu State and sought the details of Reserve Forest located within 25 km from the boundary of the project site vide reference 1st cited.

Based on the above, the Forest Range Officer, Karur Range has inspected the above-said project site and reported vide reference 2nd cited. In that, the proposed project site by M/s Greenergy Pure Ethanol Private Limited for establishment of 600 KLD Grain based Distillery Unit and 13 MW Co-generation Unit at S.F.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 and 72/2 of Kumaramangalam Village, Kulithalai Taluk, Karur District, Tamil Nadu State is located at a distance of 320m from the boundary of the Marudhur Reserved Forest of Karur Forest Division. Moreover, it is informed that, the Karur-Trichy National Highway, Canal and Railway track is passing in between the project site and Marudhur Reserved Forest.

Further, it is informed that, there is no notified Protected Areas, Tiger Reserves within the radius of 25km from the proposed project site boundary.

Sd/-S.Shanmugam,
District Forest Officer,
Karur Forest Division,
Karur.

To
M/s Greenergy Pure Ethanol Private Limited,
No.324, Golden Point 4,
Queens Road Cross,
Vasanthnagar,
Bangalore - 560052.

- 7 JUL 2025

// True Copy//By Order //

7/7/2025
Draughting Officer.

ANNEXURE-7

GREENERGY PURE ETHANOL PRIVATE LIMITED

Regd. Off: No.324, Golden Point 4, Off. Queens Road Cross, Vasant Nagar, Bengaluru 560052, KA, IN
Ph: 080- 49222220 // **Email:** tngpepl@gmail.com // **GST:** 29AAJCG8851F1Z6

GPEPL/TN/LTR-07/Temple-NOC/24-25 **Date: 03.03.2025**

To,
The Special Officer,
Kumaramangalam Gram Panchayat,
Kulithalai Taluk, Karur District- 639107,
Tamil Nadu.

Sir,

Sub: Establishment of 6000 TCD Crushing Unit, 600 KLD Multi Feed (cane syrup, Molasses & grain based) Distillery Unit and 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. Greenergy Pure Ethanol Private Limited- request for issue of NOC -reg.,

******

Adverting to the above, M/s. Greenergy Pure Ethanol Private Limited has proposed for establishment of 6000 TCD Crushing Unit, 600 KLD Multi Feed (cane syrup, Molasses & grain based) Distillery Unit and 13 MW Co-generation Unit in an area of 33.35 Acres at Kumaramangalam Village, Kulithalai Taluk, Karur District, Tamil Nadu State.

However, it has been observed that Sri Karupanna Swamy Temple, Kumaramangalam is located at a distance of 460 m towards West side of the project boundary.

The industry will make provision of pollution mitigation through installation of Electrostatic Precipitator (ESP) to control air pollution and Effluent Treatment Plant and Condensate Polishing Unit as part of water pollution mitigation measures. The project is a Zero Liquid Discharge plant and no water will be released outside the industrial premises.

In view of the above, it is hereby informed that there is no impact on the temple due to the establishment of the industry as it is located at an aerial distance of 460 m from the project site. Therefore, it is hereby requested to issue NOC for the establishment of the industry.

Thanking You,

Yours faithfully,
For M/s. Greenergy Pure Ethanol Private Limited

Authorized Signatory

Greenergy Pure Ethanol Pvt. Ltd. Bengaluru

04 MAR 2025

ANNEXURE-8

791/2024

भारतीय गैर न्यायिक

एक सौ रुपये

Rs. 100

रु. 100

ONE HUNDRED RUPEES

सत्यमेव जयते

भारत INDIA

INDIA NON JUDICIAL

தமிழ்நாடு तमिलनाडु TAMILNADU 16 FEB 2024

DW 568443

அ. ஜம்ஷாத்.
அ. ஜம்ஷாத், மு.வி
தொழிலாளர் நீதி மன்றம்
மாவட்ட நீதி மன்ற வளாகம்
எண்: 2/2000, திருச்சி
செல் எண்: 93451 61811

M/s. Greenergy Pure Ethanol Pvt, Ltd., Bangalore.

SALE DEED

This Deed of Absolute Sale made and executed at Kulithalai on this 26th day of February, 2024.

Mr. P.Ganesh, Son of Mr. Panneer Selvam, aged about 34 years, formerly residing at Karungadu, Beat 1 North, Nangavaram, Kulithalai Taluk, Karur District. And now residing at Door No.19/1, Nehruji Street, Nadar Medu, Erode Taluk & District - 638002, Tamil Nadu **(Id Aadhar No.6800 2116 8014 & PAN - BFCPG0222E)** herein after called the 'VENDOR'.

PURCHASER

For M/s.Greenergy Pure Ethanol Private Limited

Authorised Signatory

Manager/Authorized Signatory

VENDOR

Ganesh.P

Document No. 791 of 2024 of Book 1 Contains 17 Sheets 1 Sheet

Registering Officer

To and In-Favor of **M/s.GREENERGY PURE ETHANOL PRIVATE LIMITED, (PAN - AAJCG8851F)** registered under the Companies Act vide CIN - U24200KA2022PTC163272, having Office at No.324, 1st Floor, Golden Point, 4, Vasant Nagar, Bangalore - 560051, State of Karnataka, represented by its Manager/Authorized Signatory, **Mr. Thota Kiran Kumar,** S/o. Naga Venkata Siva Sai Gangathara Rao, (Id Aadhar No.4285 8191 7541) authorized under Board Resolution dated 05.02.2024 by M/s. Greenergy Pure Ethanol Private Limited, herein after called the' PURCHASER'

The terms VENDOR and PURCHASER, wherever it may occur shall mean and include themselves, their heirs, legal representatives, executors, administrators and assigns.

This Deed of Sale Witnesseth as follows

Whereas the VENDOR is the sole, legal, true absolute and exclusive Owner of the property viz., **Lands in Survey No.63 presently comprised in Survey No.63/1 of Kumaramangalam Village Total Extent of Acre 2.00 Cents** which is more fully and particularly described in the schedule hereunder, which he has purchased from and out of his own funds and his name from Mrs.Devakunjari on 19.04.2004 under a Registered Sale Deed bearing **Document No.575/2004** in Book 1 on the file of the Sub Registrar Office, Kulithalai, Karur District.

Ever since the VENDOR has been in continuous, uninterrupted peaceful possession and enjoyment of the said property, with full powers of alienation, without any let or hindrances, paying all taxes and outgoing payable to the Government and Local Authorities and has got valid and marketable title to the said property.

And Whereas the VENDOR has offered to sell the Schedule mentioned property and the Purchaser has also accepted to buy the Schedule mentioned property

PURCHASER

For M/s.Greenergy Pure Ethanol Private Limited

Authorised

Manager/Authorized Signatory

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Registering Officer

VENDOR

For a net Sale Consideration of Rs.30,00,000/- (Rupees Thirty Lakhs Only), free from all encumbrances, for which sum the VENDOR has also agreed to convey the Sale of Schedule mentioned Property, unto the Purchaser free from all encumbrances.

Whereas after deducting the TDS of 1% i.e., Rs.30,000/- from the above said amount, the VENDOR has received the entire Sale Consideration of the sum of Rs.29,70,000/- (Rupees Twenty Nine Lakhs and Seventy Thousand Only) from the Purchaser with full satisfaction by way of Demand Draft drawn on Union Bank of India, Bangalore Cantonment Branch, Bangalore vide D.D.No.961838 dated 23.02.2024.

NOW THIS DEED OF ABSOLUTE SALE WITNESSETH AS FOLLOWS:-

In pursuance of the above said mutually agreed terms and in consideration of the above said sum of Rs.29,70,000/- (Rupees Twenty Nine Lakhs and Seventy Thousand Only) already paid by the PURCHASER to the VENDOR as stated above, the VENDOR doth hereby sell, convey, grant, transfer and assign, by way of absolute sale to and in favor of the Purchaser herein the Sale Property which is more fully and particularly described in the schedule hereunder, together with all ways, waters, water courses, ditches easements, advantages, liberties, rights and privileges, and all other appurtenances whatsoever appertaining thereto, to have and to hold the same as absolute owner with all powers of alienation,

THE VENDOR DOTH HEREBY FURTHER COVENANT WITH THE PURCHASER AS FOLLOWS:-

I) The VENDOR is the sole and absolute OWNER of the property hereby conveyed and that he has perfect right, title and interest to convey the said property to the Purchaser in the manner aforesaid and no other person has got any right, title and interest to convey the said property to the Purchaser in the manner aforesaid.

PURCHASER

For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

VENDOR

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Registering Officer

II) The VENDOR doth hereby declare that hereafter the VENDOR nor his heirs has got any manner of Right, Title or Interest over the property hereby sold. Even if anybody claims any such right, such claim shall be null and void.

III) The VENDOR doth hereby declare that there are no encumbrance, lien, trust, attachment, claim, charge, whatsoever which is subsisting on the said property and that the said property is not the subject matter of any litigation or proceedings and is not charged in favour of any Court, Revenue or other authority. If, However, there happen to be any encumbrances or litigation over the property and are disclosed at a later date, the VENDOR undertakes to clear them at his own cost and own motion and also shall compensate the Purchaser if any losses or expenses if any, the Purchaser may be put to, owing to the existence of such encumbrances and defects binding the VENDOR's other properties movable and immovable and also binding himself personally.

IV) The VENDOR doth hereby covenant with the Purchaser that the Purchaser shall and may at all times hereafter quietly and peacefully possess and enjoy the said property without any let or interruption or disturbances by the VENDOR or by any one claiming through him.

V) The VENDOR doth hereby covenant with the Purchaser that he and all persons lawfully and equitably claiming title will from time to time and at all times hereafter at the cost of the Purchaser execute and register all such acts, deeds and things for further and more perfectly assuring the title of the Purchaser in respect of the property hereby conveyed.

VI) The VENDOR doth hereby covenant with the Purchaser that he shall sign and execute any rectification at the expenses of purchaser that may be necessary in order to make this sale absolute.

VII) The VENDOR doth hereby covenant with the Purchaser that he has, this day handed over to the Purchaser all documents and records pertaining to the title of the schedule mentioned property.

PURCHASER

For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

Document No. 791 of 2024 of Book 1 Contains 17 Sheets 4 Sheet

Registering Officer

VENDOR

VIII) The VENDOR doth hereby declare that all taxes and other public charges payable in respect of the schedule mentioned property hereby conveyed has been paid up to this date and further covenant with the Purchaser that there are no arrears of tax payable to Government or local body.

IX) The VENDOR doth hereby declare and assure the Purchaser that he shall indemnify and shall keep indemnified the Purchaser against any loss or damage that the Purchaser may be put to by reason of any kind of encumbrance over the property.

X) The VENDOR hereby expressly declares that the sale of property mentioned in the schedule hereunder is not in violation of any law.

XI) The VENDOR doth hereby covenant with the Purchaser that he shall sign and execute any rectification at the expenses of purchaser that may be necessary in order to make this sale absolute.

XII) The VENDOR doth hereby covenant with the Purchaser that he shall also sign and execute any letter or form that may be required for the mutation of name in the revenue records and transfer of Patta in favour of the Purchaser or for such other purposes.

To this effect, the VENDOR has executed this Deed of Absolute Sale on the day, month and year first above mentioned in the presence of following witnesses.

SCHEDULE OF PROPERTY

SCHEDULE OF PROPERTY

Karur District, Karur Registration District, Kulithalai Sub Registration District, Kulithalai Taluk,

1) Within limits of Kumaramangalam Village, in Ayan Nanja Survey No.63 in Land measuring **Acre 0.50 Cents** out of Acre 5.92 Cents (equal to Hectare 2.39.5)

PURCHASER

For M/s.Greenergy Pure Ethanol Private Limited

Authorised

Manager/Authorized Signatory

VENDOR

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Registering Officer

2) Within limits of Kumaramangalam Village, in Ayan Nanja Survey No.63 in Land measuring **Acre 1.50 Cents** out of Acre 5.92 Cents (equal to Hectare 2.39.5)

Bounded on the

North by : Lands belongs to Vendor i.e., Ganesh
East by : Lands belongs to Vendor i.e., Ganesh
West by : Lands belongs to Anandhi
South by : Vadivu Canal

Within this Four boundaries, Total Extent of Lands in Items Nos.1 & 2 is **Acre 2.00 Cents** together with the pathway, easement, canal and irrigation rights etc.,

The Property lies within the limits of Kulithalai Taluk and presently comprised in Survey No.63/1 of Kumaramangalam Village vide Patta No.1078 respectively.

The Present market value of the Property is Rs.30,00,000/-.

PURCHASER
For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

VENDOR

Witnesses:

1. **(Panneer Selvam)**, S/o. Chinnappa Gounder, Door No.333, Thirumurugan Nagar, Pettavaithalai, Srirengam Taluk, Trichirapalli District - 639112. (Aadhar No.2618 2306 7865)

2. **(Jeelan Basha),** S/o. Shaik Mahamood, Door No.3/501-C-2, Anbu Nagar, Avalappalli Road, Hosur - 635109, Krishnagiri Dt. (Aadhar No.5189 1339 3001)



Drafted by:-
J.KAJA MOIDEEN,B.A.,M.L.,
Advocate, (Roll No.Ms3654/2010)
#71, 1st Floor, EVR Road,
Puthur, Trichy-620017.
Cell No. 99408-71076.

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Contains 17 Sheets 6 Sheet

Registering Officer

The Statement Under Rule 3 (1) of Tamil Nadu Stamp (Prevention of Undervaluation of Instruments) Rules 1968

District:- Karur

Kulithalai S.R.O

Taluk :- Kulithalai

Village:- Kumaramangalam

Serial No	Survey No	Extent Acre - Cents	Nature of Property	Market Value
1	63/1	0 . 50	Nanja	Rs. 7,50,000/-
2	63/1	1 . 50	Nanja	Rs. 22,50,000/-
Total		**Acre 2 . 00 Cents**		**Rs.30,00,000/-**

DECLARATION

Affidavit that the Property is not situated in water body area.

(Declaration according to Judgment in W.P.(MD)No.22163/2018)

We certify that the property identified in this document is not comes under the category of water bodies, waterways or catchment areas.

We also understand that we may be subject to legal action if we are later found to have misrepresented or misrepresented them.

VENDOR

G. Sasi K. P

PURCHASER

For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

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Registering Officer

தமிழ்நாடு அரசு

வருவாய்த் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

மாவட்டம் : கரூர் வட்டம் : குளித்தலை

வருவாய் கிராமம் : குமாரமங்கலம் பட்டா எண் : 1078

உரிமையாளர்கள் பெயர்

1. பன்னீர்செல்வம் மகன் கணேஷ்

புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	
63	1	--	--	1 - 21.00	28.40	--	--	2019/0105/14/019203--2019/14/03/000015SD -- 16-08-2019
65	3A	--	--	0 - 98.50	23.12	--	--	2019/0105/14/025349--2019/14/03/000020SD -- 20-08-2019
68	1A1	--	--	0 - 51.50	12.09	--	--	2019/0105/14/025276--2019/14/03/000021SD -- 20-08-2019
				2 - 71.00	63.61			

குறிப்பு2 :

1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் https://eservices.tn.gov.in என்ற இணைய தளத்தில் 14/03/001/01078/30116 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 24-02-2024 அன்று 12:02:44 PM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின்2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

Document No. 791 of 2024 of Book 1 Contains 17 Sheets 8 Sheet

Registering Officer

CERTIFICATE UNDER SECTION 42 OF THE INDIAN STAMP ACT 1899

S.No 600 of 2024

I hereby certify that a sum of ₹ 2,10,000/- (Rupees Two Lakh Ten Thousand only) on account of deficit stamp duty has been levied under section 41 of the Stamp Act in respect of this instrument from Mr. தோட்டா கிரண்ண குமார் residing at No.324, 1st Floor, Golden Point, 4, Vasant Nagar, Bangalore, Karnataka, India, 560051.

Sub Registrar Kulithalai
Date 26/02/2024

Signature of Sub Registrar and Collector under Section 41 of the Indian Stamp Act

Presented in the office of the Sub Registrar of Kulithalai and fee of ₹ 60,810/- paid at 05:29 PM on the 26/02/2024 by

Left Thumb



For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

Additions as per recitals of document

Execution admitted by

Left Thumb



Identity of the person verified through Consent based AADHAAR Authentication using Thumb Impression with UIDAI reference No. :
UKC:2118107d768661604e49e3a68cbe5e511e050e
(Details from UIDAI : P Ganesh PANNEERSELVAM C, 1989, xxxxxxxx8014)



Claim admitted by

Left Thumb



For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

Identity of the person verified through Consent based AADHAAR Authentication using Thumb Impression with UIDAI reference No. :
UKC:467403a70d13266d1341819be7ec2b704aa72c
(Details from UIDAI : Theta Kiran Kumar S/O Naga Venkata Siva Sai Gangadhara Rao, 05-06-1992,



Document No. 791 of 2024 of Book 1 Contains 17 Sheets and 9 Sheet

Registering Officer

	xxxxxxxx7541)	

26th day of February 2024

krishnan marappan
Sub Registrar
Kulithalai

Registered as Number R/Kulithalai/Book-1/791/2024

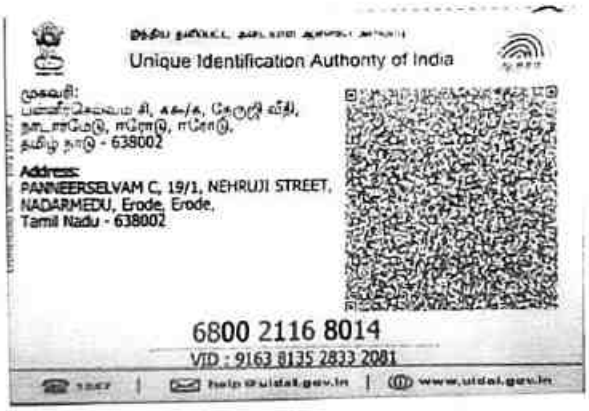
Date: 26/02/2024
Kulithalai

krishnan marappan
Sub Registrar

Document No. 791 of 2024 of Book 1 Contains 17 Sheets 10 Sheet

Registering Officer







Document No. 791 of 2024 of Book 1
Contains 17 Sheets 11 Sheet

Registering Officer

भारत सरकार
Government of India

भारतीय विशिष्ट पहचान प्राधिकरण
Unique Identification Authority of India

Enrolment No.: 0647/02766/07908

To
Thota Kiran Kumar
S/O Naga Venkata Siva Sai Gangadhara Rao
1-188-28
siva ganga
siva ganga
Machilipatnam
Krishna Andhra Pradesh - 521001
9071357624

आपका आधार क्रमांक / Your Aadhaar No. :
4285 8191 7541
VID : 9166 9218 3186 3447
मेरा आधार, मेरी पहचान

Government of India

Thota Kiran Kumar
Date of Birth/DOB: 05/06/1992
Male/ MALE

4285 8191 7541
VID : 9166 9218 3186 3447
मेरा आधार, मेरी पहचान

Government of India

सूचना

- आधार पहचान का प्रमाण है, नागरिकता का नहीं।
- सुरक्षित QR कोड / ऑफलाइन XML / ऑनलाइन ऑथेंटिकेशन से पहचान प्रमाणित करें।
- यह एक इलेक्ट्रॉनिक प्रक्रिया द्वारा बना हुआ पत्र है।

INFORMATION

- Aadhaar is a proof of identity, not of citizenship.
- Verify identity using Secure QR Code/ Offline XML/ Online Authentication.
- This is electronically generated letter.

- आधार देश भर में मान्य है।
- आधार कई सरकारी और गैर सरकारी सेवाओं को पाना आसान बनाता है।
- आधार में मोबाइल नंबर और ईमेल ID अपडेट रखें।
- आधार को अपने स्मार्ट फोन पर रखें, mAadhaar App के साथ।

- Aadhaar is valid throughout the country.
- Aadhaar helps you avail various Government and non-Government services easily.
- Keep your mobile number & email ID updated in Aadhaar.
- Carry Aadhaar in your smart phone – use mAadhaar App.

भारतीय विशिष्ट पहचान प्राधिकरण
Unique Identification Authority of India

Address:
S/O Naga Venkata Siva Sai Gangadhara Rao,
1-188-28, siva ganga, siva ganga,
Machilipatnam, Krishna,
Andhra Pradesh - 521001

Download Date: 31/01/2023

4285 8191 7541
VID : 9166 9218 3186 3447

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For M/s.Greenergy Pure Ethanol
Private Limited

Authorised Signatory

Manager/Authorized Signatory

Document No. 791 of 2024 of Book 1
Contains 17 Sheets 12 Sheet

Registering Officer

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Scanned with OKEN Scanner

GREENERGY PURE ETHANOL PRIVATE LIMITED

Regd. Off: No.324, Golden Point 4, Off. Queens Road Cross, Vasant Nagar, Bengaluru 560052, KA, IN

Ph: 080- 49222222 II Email: cs@goldengrp.co.in II CIN: U24200KA2022PTC163272

CERTIFIED TRUE COPY OF THE RESOLUTION PASSED AT THE MEETING OF THE BOARD OF DIRECTORS OF GREENERGY PURE ETHANOL PRIVATE LIMITED HELD AT THE REGISTERED OFFICE OF THE COMPANY ON 5TH FEBRUARY 2024 AT 9.00 AM

SUB: AUTHORIZATION FOR PURCHASE OF LANDS IN THE NAME OF COMPANY

RESOLVED THAT pursuant to applicable provisions of Companies Act, 2013 and other applicable statutory rules and regulations and subject to approval of government authorities, the approval of the Board of Directors, be and is hereby accorded to the Company to purchase parcels of Lands as detailed below and indicated in the Site Plans in terms of agreements proposed to be entered into by the Company and for consideration as agreed between the parties to agreements.

1. Lands in Survey Nos. 63, 65/2, 65/3 presently comprised in New Survey Nos. 63/2, 65/2 & 65/3B of Kumaramangalam Village, total extent of Acre 5.60 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.
2. Lands in Survey Nos. 68/1A, 70, 68/1B, presently comprised in New Survey Nos. 68/1A1, 70/1 & 68/1B1 of Kumaramangalam Village, total extent of Acre 3.77 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.
3. Lands in Survey No. 63 presently comprised in New Survey No. 63/1 of Kumaramangalam Village, total extent of Acre 2.00 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.
4. Lands in Survey Nos. 63, 65/1, 65/3 presently comprised in New Survey Nos. 63/1, 65/1 & 65/3A of Kumaramangalam Village, total extent of Acre 3.60 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.
5. Lands in Survey No. 67 of Kumaramangalam Village, total extent of Acre 0.98 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.
6. Lands in Survey Nos. 68/1A, 70 presently comprised in New Survey Nos. 68/1A2, 70/2 of Kumaramangalam Village, total extent of Acre 2.85 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.
7. Lands in Survey No. 68/1B of Kumaramangalam Village, total extent of Acre 0.90 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.
8. Lands in Survey Nos. 68/2, 69/2, 69/1, 72/2 of Kumaramangalam Village, total extent of Acre 2.35 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.

RESOLVED FURTHER THAT Mr.Thota Kiran Kumar, S/o. Mr. Naga Venkata Sai Siva Gangadhara Rao Thota, bearing PAN ASWPT6006F and Aadhar No 428581917541;Manager of the Company; be and is hereby authorized to communicate on behalf of the company with their Vendor, Government Officials and to represent the company before the concerned Sub Registrar Office, to sign the sale agreements and sale deeds on behalf of the company and to get register the Sale

For Greenergy Pure Ethanol Pvt Ltd

Authorised Signatory

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Registering Officer

For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

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सत्यमेव जयते

GOVERNMENT OF INDIA
MINISTRY OF CORPORATE AFFAIRS

Central Registration Centre

Certificate of Incorporation

[Pursuant to sub-section (2) of section 7 and sub-section (1) of section 8 of the Companies Act, 2013 (18 of 2013) and rule 18 of the Companies (Incorporation) Rules, 2014]

I hereby certify that GREENERGY PURE ETHANOL PRIVATE LIMITED is incorporated on this First day of July Two thousand twenty-two under the Companies Act, 2013 (18 of 2013) and that the company is limited by shares.

The Corporate Identity Number of the company is U24200KA2022PTC163272.

The Permanent Account Number (PAN) of the company is **AAJCG8851F** *

The Tax Deduction and Collection Account Number (TAN) of the company is **BLRG29460E** *

Given under my hand at Manesar this First day of July Two thousand twenty-two .

Digital Signature Certificate
SHIVARAJ C RANJERI
ASST. REGISTRAR OF COMPANIES
For and on behalf of the Jurisdictional Registrar of Companies
Registrar of Companies
Central Registration Centre

Disclaimer: This certificate only evidences incorporation of the company on the basis of documents and declarations of the applicant(s). This certificate is neither a license nor permission to conduct business or solicit deposits or funds from public. Permission of sector regulator is necessary wherever required. Registration status and other details of the company can be verified on www.mca.gov.in

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Mailing Address as per record available in Registrar of Companies office:

GREENERGY PURE ETHANOL PRIVATE LIMITED
No.324, 1st Floor, Golden Point 4,, Vasnat Nagar, Bengaluru, Bangalore,
Karnataka, India, 560051

* as issued by the Income Tax Department

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Registering Officer

For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory



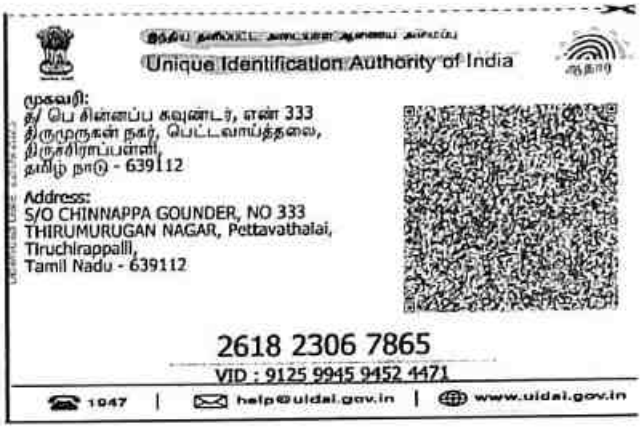
இந்திய அரசு
Government of India

பன்னீர்செல்வம் சி
Panneerselvam C
பிறந்த நாள்/DOB: 07/01/1960
ஆண்/ MALE

Issue Date: 19/08/2012

2618 2306 7865
VID : 9125 9945 9452 4471

எனது ஆதார், எனது அடையாளம்



இந்திய தனித்துவ அடையாள ஆணைய அரசு
Unique Identification Authority of India

முகவரி:
த/ பெ சின்னப்ப கவுண்டர், எண் 333
திருமுருகன் நகர், பெட்டவாய்த்தலை,
திருச்சிராப்பள்ளி,
தமிழ் நாடு - 639112

Address:
S/O CHINNAPPA GOUNDER, NO 333
THIRUMURUGAN NAGAR, Pettavathalai,
Tiruchirappalli,
Tamil Nadu - 639112

2618 2306 7865
VID : 9125 9945 9452 4471

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Registering Officer





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Contains 17 Sheets 16 Sheet

Registering Officer



For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

Document No. 791 of 2024 of Book

Contains 17 Sheets 17 Sheet

Registering Officer

792/2024

भारतीय गैर न्यायिक

एक सौ रुपये

Rs. 100

रु. 100

ONE HUNDRED RUPEES

सत्यमेव जयते

भारत INDIA

INDIA NON JUDICIAL

தமிழ்நாடு तमिलनाडु TAMILNADU 16 FEB 2024

M/s. Greenergy Pure Ethanol Pvt Ltd., Bangalore.

DW 568444

அ. ஹம்ஷாத்

அ. ஹம்ஷாத், மு.வி
நோட்டிலாளர் நீதி மன்றம்
மாவட்ட நீதி மன்ற வளாகம்
லை: 2/2000, திருச்சி
செல் எண்: 93451 61811

SALE DEED

This Deed of Absolute Sale made and executed at Kulithalai on this 26th day of February, 2024.

Mr. P.Ganesh, Son of Mr. Panneer Selvam, aged about 34 years, formerly residing at Karungadu, Phase 1 North, Nangarvaram, Kulithalai Taluk, Karur District. And now residing at Door No.19/1, Nehruji Street, Nadar Medu, Erode Taluk & District - 638002, Tamil Nadu **(Id Aadhar No.6800 2116 8014 & PAN - BFCPG0222E)** herein after called the 'VENDOR'.

PURCHASER

For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

VENDOR

Document No. 792 of 2024 of Book 1 Contains 19 Sheets 1 Sheet

Registering Officer

To and In-Favor of **M/s.GREENERGY PURE ETHANOL PRIVATE LIMITED, (PAN - AAJCG8851F)** registered under the Companies Act vide CIN - U24200KA2022PTC163272, having Office at No.324, 1st Floor, Golden Point, 4, Vasant Nagar, Bangalore - 560051, State of Karnataka, represented by its Manager/Authorized Signatory, **Mr. Thota Kiran Kumar,** S/o. Naga Venkata Siva Sai Gangathara Rao, (Id Aadhar No.4285 8191 7541) authorized under Board Resolution dated 05.02.2024 by M/s. Greenergy Pure Ethanol Private Limited, herein after called the' PURCHASER'

The terms VENDOR and PURCHASER, wherever it may occur shall mean and include themselves, their heirs, legal representatives, executors, administrators and assigns.

This Deed of Sale Witnesseth as follows:-

Whereas the VENDOR is the sole, legal, true absolute and exclusive Owner of the property viz., **Lands in Survey Nos.63, 65/1 & 65/3 presently comprised in New Survey Nos.63/1, 65/1 & 65/3A of Kumaramangalam Village Total Extent of Acre 3.60 Cents** which is more fully and particularly described in the schedule hereunder, which he has purchased from and out of his own funds and his name from Sundara Vadivel and Subbammal on 14.04.2004 under a Registered Sale Deed bearing **Document No.576/2004** in Book 1 on the file of the Sub Registrar Office, Kulithalai, Karur District.

Ever since the VENDOR has been in continuous, uninterrupted peaceful possession and enjoyment of the said property, with full powers of alienation, without any let or hindrances, paying all taxes and outgoing payable to the Government and Local Authorities and has got valid and marketable title to the said property.

And Whereas the VENDOR has offered to sell the Schedule mentioned property and the Purchaser has also accepted to buy the Schedule mentioned property

PURCHASER
For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

Document No. 792 of 2024 of Book 1 Contains 19 Sheets 2 Sheet

Registering Officer

VENDOR

For a net Sale Consideration of Rs.54,00,000/- (Rupees Fifty Four Lakhs Only), free from all encumbrances, for which sum the VENDOR has also agreed to convey the Sale of Schedule mentioned Property, unto the Purchaser free from all encumbrances.

Whereas after deducting the TDS of 1% i.e., Rs.54,000/- from the above said amount, the VENDOR has received the entire Sale Consideration of the sum of Rs.53,46,000/- (Rupees Fifty Three Lakhs and Forty Six Thousand Only) from the Purchaser with full satisfaction by way of Demand Draft drawn on Union Bank of India, Bangalore Cantonment Branch, Bangalore vide D.D.No.961839 dated 23.02.2024.

NOW THIS DEED OF ABSOLUTE SALE WITNESSETH AS FOLLOWS:-

In pursuance of the above said mutually agreed terms and in consideration of the above said sum of Rs.53,46,000/- (Rupees Fifty Three Lakhs and Forty Six Thousand Only) already paid by the PURCHASER to the VENDOR as stated above, the VENDOR doth hereby sell, convey, grant, transfer and assign, by way of absolute sale to and in favor of the Purchaser herein the Sale Property which is more fully and particularly described in the schedule hereunder, together with all ways, waters, water courses, ditches easements, advantages, liberties, rights and privileges, and all other appurtenances whatsoever appertaining thereto, to have and to hold the same as absolute owner with all powers of alienation,

THE VENDOR DOTH HEREBY FURTHER COVENANT WITH THE PURCHASER AS FOLLOWS:-

I) The VENDOR is the sole and absolute OWNER of the property hereby conveyed and that he has perfect right, title and interest to convey the said property to the Purchaser in the manner aforesaid and no other person has got any right, title and interest to convey the said property to the Purchaser in the manner aforesaid.

VENDOR

PURCHASER

For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

Document No. 792 of 2024 of Book 1 Contains 19 Sheets 3 Sheet

Registering Officer

II) The VENDOR doth hereby declare that hereafter the VENDOR nor his heirs has got any manner of Right, Title or Interest over the property hereby sold. Even if anybody claims any such right, such claim shall be null and void.

III) The VENDOR doth hereby declare that there are no encumbrance, lien, trust, attachment, claim, charge, whatsoever which is subsisting on the said property and that the said property is not the subject matter of any litigation or proceedings and is not charged in favour of any Court, Revenue or other authority. If, However, there happen to be any encumbrances or litigation over the property and are disclosed at a later date, the VENDOR undertakes to clear them at his own cost and own motion and also shall compensate the Purchaser if any losses or expenses if any, the Purchaser may be put to, owing to the existence of such encumbrances and defects binding the VENDOR's other properties movable and immovable and also binding himself personally.

IV) The VENDOR doth hereby covenant with the Purchaser that the Purchaser shall and may at all times hereafter quietly and peacefully possess and enjoy the said property without any let or interruption or disturbances by the VENDOR or by any one claiming through him.

V) The VENDOR doth hereby covenant with the Purchaser that he and all persons lawfully and equitably claiming title will from time to time and at all times hereafter at the cost of the Purchaser execute and register all such acts, deeds and things for further and more perfectly assuring the title of the Purchaser in respect of the property hereby conveyed.

VI) The VENDOR doth hereby covenant with the Purchaser that he shall sign and execute any rectification at the expenses of purchaser that may be necessary in order to make this sale absolute.

PURCHASER

For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

VENDOR

Document No. 792 of 2024 of Book 1 Contains 19 Sheets 4 Sheet

Registering Officer

VII) The VENDOR doth hereby covenant with the Purchaser that he has, this day handed over to the Purchaser all documents and records pertaining to the title of the schedule mentioned property.

VIII) The VENDOR doth hereby declare that all taxes and other public charges payable in respect of the schedule mentioned property hereby conveyed has been paid up to this date and further covenant with the Purchaser that there are no arrears of tax payable to Government or local body.

IX) The VENDOR doth hereby declare and assure the Purchaser that he shall indemnify and shall keep indemnified the Purchaser against any loss or damage that the Purchaser may be put to by reason of any kind of encumbrance over the property.

X) The VENDOR hereby expressly declares that the sale of property mentioned in the schedule hereunder is not in violation of any law.

XI) The VENDOR doth hereby covenant with the Purchaser that he shall sign and execute any rectification at the expenses of purchaser that may be necessary in order to make this sale absolute.

XII) The VENDOR doth hereby covenant with the Purchaser that he shall also sign and execute any letter or form that may be required for the mutation of name in the revenue records and transfer of Patta in favour of the Purchaser or for such other purposes.

To this effect, the VENDOR has executed this Deed of Absolute Sale on the day, month and year first above mentioned in the presence of following witnesses.

SCHEDULE OF PROPERTY

Karur District, Karur Registration District, Kulithalai Sub-Registration District, Kulithalai Taluk,

VENDOR

PURCHASER

For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

Document No. 792 of 2024 of Book 1 Contains 19 Sheets 5 Sheet

Registering Officer

1) Within limits of Kumaramangalam Village, in Ayan Nanja Survey No.63 in Land measuring **Acre 1.00 Cents** out of Acre 5.92 Cents (equal to Hectare 2.39.5)

North by : Lands Mentioned in the following Items i.e., Lands in Survey Nos.65/1 & 65/3.

West by : Lands belongs to DevaKunjari

South by : Vadivu Canal

East by : Lands Purchased by Nethaji Manian through his Guardian Karumbayee Ammal

Within this Four boundaries, Total Extent of **Acre 1.00 Cents**

2) Within limits of Kumaramangalam Village, in Ayan Nanja Survey No.65/1 in Land measuring **Acre 0.16 Cents** (equal to Hectare 0.06.5)

3) Within limits of Kumaramangalam Village, in Ayan Nanja Survey No.65/3 in Land measuring **Acre 2.44 Cents** which is western side out of Acre 4.88 Cents (equal to Hectare 1.97.5)

North by : Railway Line

East by : Lands Purchased by Nethaji Manian through his Guardian Karumbayee Ammal

South by : Lands belongs to Karumbayee Ammal and Devakunjari, D/o. Vadivammal

West by : Lands belongs to Anandhi

Within this Four boundaries, Total Extent of above said Lands in Item Nos.2 & 3 Items is **Acre 2.60 Cents**

Total Extent of above said Lands in Item Nos.1, 2 & 3 is **Acre 3.60 Cents** together with the pathway, easement, canal and irrigation rights etc.,

PURCHASER

For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

Document No. 792 of 2024 of Book 1 Contains 19 Sheets 6 Sheet

Registering Officer

VENDOR

The Property lies within the limits of Kulithalai Taluk and presently comprised in Survey Nos.63/1, 65/1 & 65/3A of Kumaramangalam Village vide Patta No.1078 & 358 respectively.

The Present market value of the Property is Rs.54,00,000/-.

PURCHASER
For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

VENDOR

Witnesses:

1. **(Panneer Selvam)**, S/o. Chinnappa Gounder, Door No.333, Thirumurugan Nagar, Pettavaithalai, Srirengam Taluk, Trichirapalli District - 639112. (Aadhar No.2618 2306 7865)

2. **(Jeelan Basha),** S/o. Shaik Mahamood, Door No.3/501-C-2, Anbu Nagar, Avalappalli Road, Hosur - 635109, Krishnagiri Dt. (Aadhar No.5189 1339 3001)



Drafted by:-
J.KAJA MOIDEEN,B.A.,M.L.,
Advocate, (Roll No.Ms3654/2010)
#71, 1st Floor, EVR Road,
Puthur, Trichy-620017.
Cell No. 99408-71076.

Document No. 792 of 2024 of Book 1 Contains 19 Sheets 7 Sheet

Registering Officer

The Statement Under Rule 3 (1) of Tamil Nadu Stamp (Prevention of Undervaluation of Instruments) Rules 1968

District:- Karur

Kulithalai S.R.O

Taluk :- Kulithalai

Village:- Kumaramangalam

Serial No	Survey No	Extent Acre - Cents	Nature of Property	Market Value
1	63/1	1 . 00	Nanja	Rs.15,00,000/-
2	65/1	0 . 16	Nanja	Rs. 2,40,000/-
3	65/3A	2 . 44	Nanja	Rs.36,60,000/-
Total		**Acre 3 . 60 Cents**		**Rs.54,00,000/-**

DECLARATION

Affidavit that the Property is not situated in water body area.

(Declaration according to Judgment in W.P.(MD)No.22163/2018)

We certify that the property identified in this document is not comes under the category of water bodies, waterways or catchment areas.

We also understand that we may be subject to legal action if we are later found to have misrepresented or misrepresented them.

PURCHASER

For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

VENDOR

Document No. 792 of 2024 of Book 1 Contains 19 Sheets 8 Sheet

Registering Officer

R/Kulithalai/Book-1/792/2024

CERTIFICATE UNDER SECTION 42 OF THE INDIAN STAMP ACT 1899

S.No 601 of 2024

I hereby certify that a sum of ₹ 3,78,000/- (Rupees Three Lakh Seventy Eight Thousand only) on account of deficit stamp duty has been levied under section 41 of the Stamp Act in respect of this instrument from Mr. தோட்டா கிரண் குமார் residing at No.324, 1st Floor, Golden Point, 4, Vasant Nagar, Bangalore, Karnataka, India, 560051.

Sub Registrar, Kulithalai
Date: 26/02/2024

Signature of Sub Registrar and Collector under Section 41 of the Indian Stamp Act

Presented in the office of the Sub Registrar of Kulithalai and fee of ₹ 1,08,910/- paid at 05:33 PM on the 26/02/2024 by

Left Thumb





For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

Additions as per recitals of document

Execution admitted by
Left Thumb





Identity of the person verified through Consent based AADHAAR Authentication using Thumb Impression with UIDAI reference No. : UKC:73276062f3b4495d03486db894f6498cb33b53
(Details from UIDAI : P Ganesh PANNEERSELVAM C, 03-04-1989, xxxxxxxx8014)



Claim admitted by
Left Thumb





For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

Identity of the person verified through Consent based AADHAAR Authentication using Thumb Impression with UIDAI reference No. : UKC:03465bb21c944b7a34a3c9fc31d45df9b4a08
(Details from UIDAI : Thota Kiran Kumar S/O



Document No. 792 of 2024 of Book 1
Contains 19 Sheets Sheet 1 / 2

Registering Officer

	Naga Venkata Siva Sai Gangadhara Rao, 05-06-1992, xxxxxxxx7541)	

26th day of February 2024

krishnan marappan
Sub Registrar
Kulithalai

Registered as Number **R/Kulithalai/Book-1/792/2024**

Date: 26/02/2024
Kulithalai

krishnan marappan
Sub Registrar

Document No. 792 of 2024 of Book 1
Contains 19 Sheets 10 Sheet

Registering Officer

தமிழ்நாடு அரசு

வருவாய்த் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

வட்டம் : குளித்தலை

மாவட்டம் : கரூர்

பட்டா எண் : 358

வருவாய் கிராமம் : குமாரமங்கலம்

உரிமையாளர்கள் பெயர்

1. பன்னீர்செல்வம் மகன் மைனர் கணேஷ் கார்டியன் பாட்டி பொன்னம்மாள்

புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	
65	1	--	--	0 - 6.50	1.52	--	--	D1414/119----- -- 24-07-2004
				0 - 6.50	1.52			

குறிப்பு2 :

1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் **https://eservices.tn.gov.in** என்ற இணைய தளத்தில் **14/03/001/00358/50116** என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 22-02-2024 அன்று 09:48:04 AM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின்2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

Document No. 792 of 2024 of Book 1 Contains 19 Sheets 11 Sheet

Registering Officer

தமிழ்நாடு அரசு

வருவாய்த் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

மாவட்டம் : கரூர் வட்டம் : குளித்தலை

வருவாய் கிராமம் : குமாரமங்கலம் பட்டா எண் : 1078

உரிமையாளர்கள் பெயர்

1. பன்னீர்செல்வம் மகன் கணேஷ்

புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	
63	1	--	--	1 - 21.00	28.40	--	--	2019/0105/14/019203--2019/14/03/000015SD -- 16-08-2019
65	3A	--	--	0 - 98.50	23.12	--	--	2019/0105/14/025349--2019/14/03/000020SD -- 20-08-2019
68	1A1	--	--	0 - 51.50	12.09	--	--	2019/0105/14/025276--2019/14/03/000021SD -- 20-08-2019
				2 - 71.00	63.61			

குறிப்பு2 :

1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் **https://eservices.tn.gov.in** என்ற இணைய தளத்தில் **14/03/001/01078/30116** என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 24-02-2024 அன்று 12:02:44 PM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின்2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

Document No. 792 of 2024 of Book 1 Contains 19 Sheets 12 Sheet

Registering Officer


Government of India

P Ganesh

DOB: 03/04/1989

MALE

6800 2116 8014

VID : 9163 8135 2833 2081

எனது ஆதார், எனது அடையாளம்


Unique Identification Authority of India

Address:
PANNEERSELVAM C, 19/1, NEHRUJI STREET,
NADARMEDU, Erode, Erode,
Tamil Nadu - 638002

6800 2116 8014

VID : 9163 8135 2833 2081

help@uidai.gov.in | www.uidai.gov.in


आयकर विभाग
INCOME TAX DEPARTMENT

भारत सरकार
GOVT. OF INDIA

P GANESH

PANEER SELVAM

03/04/1989

Permanent Account Number
BFCPG0222E

Signature

G. P

Document No. 792 of 2024 of Book 1

Contains 19 Sheets 13 Sheet

Registering Officer

भारत सरकार
Government of India

आधार

भारतीय विशिष्ट पहचान प्राधिकरण
Unique Identification Authority of India

Enrolment No.: 0647/02766/07908

To
Thota Kiran Kumar
S/O Naga Venkata Siva Sai Gangadhara Rao
1-188-28
siva ganga
siva ganga
Machilipatnam
Krishna Andhra Pradesh - 521001
9071357624

आपका आधार क्रमांक / Your Aadhaar No. :
4285 8191 7541
VID : 9166 9218 3186 3447
मेरा आधार, मेरी पहचान

Government of India

AADHAAR

सूचना

- आधार पहचान का प्रमाण है, नागरिकता का नहीं।
- सुरक्षित QR कोड / ऑफलाइन XML / ऑनलाइन ऑथेंटिकेशन से पहचान प्रमाणित करें।
- यह एक इलेक्ट्रॉनिक प्रक्रिया द्वारा बना हुआ पत्र है।

INFORMATION

- Aadhaar is a proof of identity, not of citizenship.
- Verify identity using Secure QR Code/ Offline XML/ Online Authentication.
- This is electronically generated letter.

- आधार देश भर में मान्य है।
- आधार कई सरकारी और गैर सरकारी सेवाओं को पाना आसान बनाता है।
- आधार में मोबाइल नंबर और ईमेल ID अपडेट रखें।
- आधार को अपने स्मार्ट फोन पर रखें, mAadhaar App के साथ।

- Aadhaar is valid throughout the country.
- Aadhaar helps you avail various Government and non-Government services easily.
- Keep your mobile number & email ID updated in Aadhaar.
- Carry Aadhaar in your smart phone – use mAadhaar App.

भारत सरकार
Government of India

आधार

Thota Kiran Kumar
Date of Birth/DOB: 05/06/1992
Male/ MALE

Issue Date: 11/12/2011

4285 8191 7541
VID : 9166 9218 3186 3447
मेरा आधार, मेरी पहचान

भारतीय विशिष्ट पहचान प्राधिकरण
Unique Identification Authority of India

AADHAAR

Address:
S/O Naga Venkata Siva Sai Gangadhara Rao,
1-188-28, siva ganga, siva ganga,
Machilipatnam, Krishna,
Andhra Pradesh - 521001

Download Date: 31/01/2023

4285 8191 7541
VID : 9166 9218 3186 3447

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For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

Document No. 792 of 2024 of Book 1
Contains 19 Sheets 14 Sheet

Registering Officer

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Scanned with OKEN Scanner

सत्यमेव जयते

GOVERNMENT OF INDIA
MINISTRY OF CORPORATE AFFAIRS

Central Registration Centre

Certificate of Incorporation

[Pursuant to sub-section (2) of section 7 and sub-section (1) of section 8 of the Companies Act, 2013 (18 of 2013) and rule 18 of the Companies (Incorporation) Rules, 2014]

I hereby certify that GREENERGY PURE ETHANOL PRIVATE LIMITED is incorporated on this First day of July Two thousand twenty-two under the Companies Act, 2013 (18 of 2013) and that the company is limited by shares.

The Corporate Identity Number of the company is U24200KA2022PTC163272.

The Permanent Account Number (PAN) of the company is **AAJCG8851F** *

The Tax Deduction and Collection Account Number (TAN) of the company is **BLRG29460E** *

Given under my hand at Manesar this First day of July Two thousand twenty-two .

Digital Signature Certificate
SHIVARAJ C RANJERI
ASST. REGISTRAR OF COMPANIES
For and on behalf of the Jurisdictional Registrar of Companies
Registrar of Companies
Central Registration Centre

Disclaimer: This certificate only evidences incorporation of the company on the basis of documents and declarations of the applicant(s). This certificate is neither a license nor permission to conduct business or solicit deposits or funds from public. Permission of sector regulator is necessary wherever required. Registration status and other details of the company can be verified on www.mca.gov.in

---

Mailing Address as per record available in Registrar of Companies office:

GREENERGY PURE ETHANOL PRIVATE LIMITED
No.324, 1st Floor, Golden Point 4,, Vasnat Nagar, Bengaluru, Bangalore,
Karnataka, India, 560051

* as issued by the Income Tax Department

For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

Document No. 792 of 2024 of Book 1 Contains 19 Sheets 15 Sheet

Registering Officer

GREENERGY PURE ETHANOL PRIVATE LIMITED

Regd. Off: No.324, Golden Point 4, Off. Queens Road Cross, Vasant Nagar, Bengaluru 560052, KA, IN

Ph: 080- 49222222 II Email: cs@goldengrp.co.in II CIN: U24200KA2022PTC163272

CERTIFIED TRUE COPY OF THE RESOLUTION PASSED AT THE MEETING OF THE BOARD OF DIRECTORS OF GREENERGY PURE ETHANOL PRIVATE LIMITED HELD AT THE REGISTERED OFFICE OF THE COMPANY ON 5TH FEBRUARY 2024 AT 9.00 AM

SUB: AUTHORIZATION FOR PURCHASE OF LANDS IN THE NAME OF COMPANY

RESOLVED THAT pursuant to applicable provisions of Companies Act, 2013 and other applicable statutory rules and regulations and subject to approval of government authorities, the approval of the Board of Directors, be and is hereby accorded to the Company to purchase parcels of Lands as detailed below and indicated in the Site Plans in terms of agreements proposed to be entered into by the Company and for consideration as agreed between the parties to agreements.

1. Lands in Survey Nos. 63, 65/2, 65/3 presently comprised in New Survey Nos. 63/2, 65/2 & 65/3B of Kumaramangalam Village, total extent of Acre 5.60 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.
2. Lands in Survey Nos. 68/1A, 70, 68/1B, presently comprised in New Survey Nos. 68/1A1, 70/1 & 68/1B1 of Kumaramangalam Village, total extent of Acre 3.77 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.
3. Lands in Survey No. 63 presently comprised in New Survey No. 63/1 of Kumaramangalam Village, total extent of Acre 2.00 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.
4. Lands in Survey Nos. 63, 65/1, 65/3 presently comprised in New Survey Nos. 63/1, 65/1 & 65/3A of Kumaramangalam Village, total extent of Acre 3.60 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.
5. Lands in Survey No. 67 of Kumaramangalam Village, total extent of Acre 0.98 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.
6. Lands in Survey Nos. 68/1A, 70 presently comprised in New Survey Nos. 68/1A2, 70/2 of Kumaramangalam Village, total extent of Acre 2.85 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.
7. Lands in Survey No. 68/1B of Kumaramangalam Village, total extent of Acre 0.90 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.
8. Lands in Survey Nos. 68/2, 69/2, 69/1, 72/2 of Kumaramangalam Village, total extent of Acre 2.35 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.

RESOLVED FURTHER THAT Mr.Thota Kiran Kumar, S/o. Mr. Naga Venkata Sai Siva Gangadhara Rao Thota, bearing PAN ASWPT6006F and Aadhar No 428581917541;Manager of the Company; be and is hereby authorized to communicate on behalf of the company with their Vendor, Government Officials and to represent the company before the concerned Sub Registrar Office, to sign the sale agreements and sale deeds on behalf of the company and to get register the Sale

For M/s.Greenergy Pure Ethanol Private Limited

For Greenergy Pure Ethanol Pvt Ltd

Authorised Signatory

Manager/Authorized Signatory

Document No. 1 Contains 19 Sheets 16 Sheet 1 of 2024-25 Book 1

Registering Officer

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இந்திய அரசு
Government of India

பன்னீர்செல்வம் சி
Panneerselvam C
பிறந்த நாள்/DOB: 07/01/1960
ஆண்/ MALE

Issue Date: 19/09/2012

2618 2306 7865
VID : 9125 9945 9452 4471

எனது ஆதார், எனது அடையாளம்



இந்திய தனித்துவ அடையாள ஆணைய அரசு
Unique Identification Authority of India

முகவரி:
த/ பெ சின்னப்ப கவுண்டர், எண் 333
திருமுருகன் நகர், பெட்டவாய்த்தலை,
திருச்சிராப்பள்ளி,
தமிழ் நாடு - 639112

Address:
S/O CHINNAPPA GOUNDER, NO 333
THIRUMURUGAN NAGAR, Pettavathalai,
Tiruchirappalli,
Tamil Nadu - 639112

Download Date: 20/09/2012

2618 2306 7865
VID : 9125 9945 9452 4471

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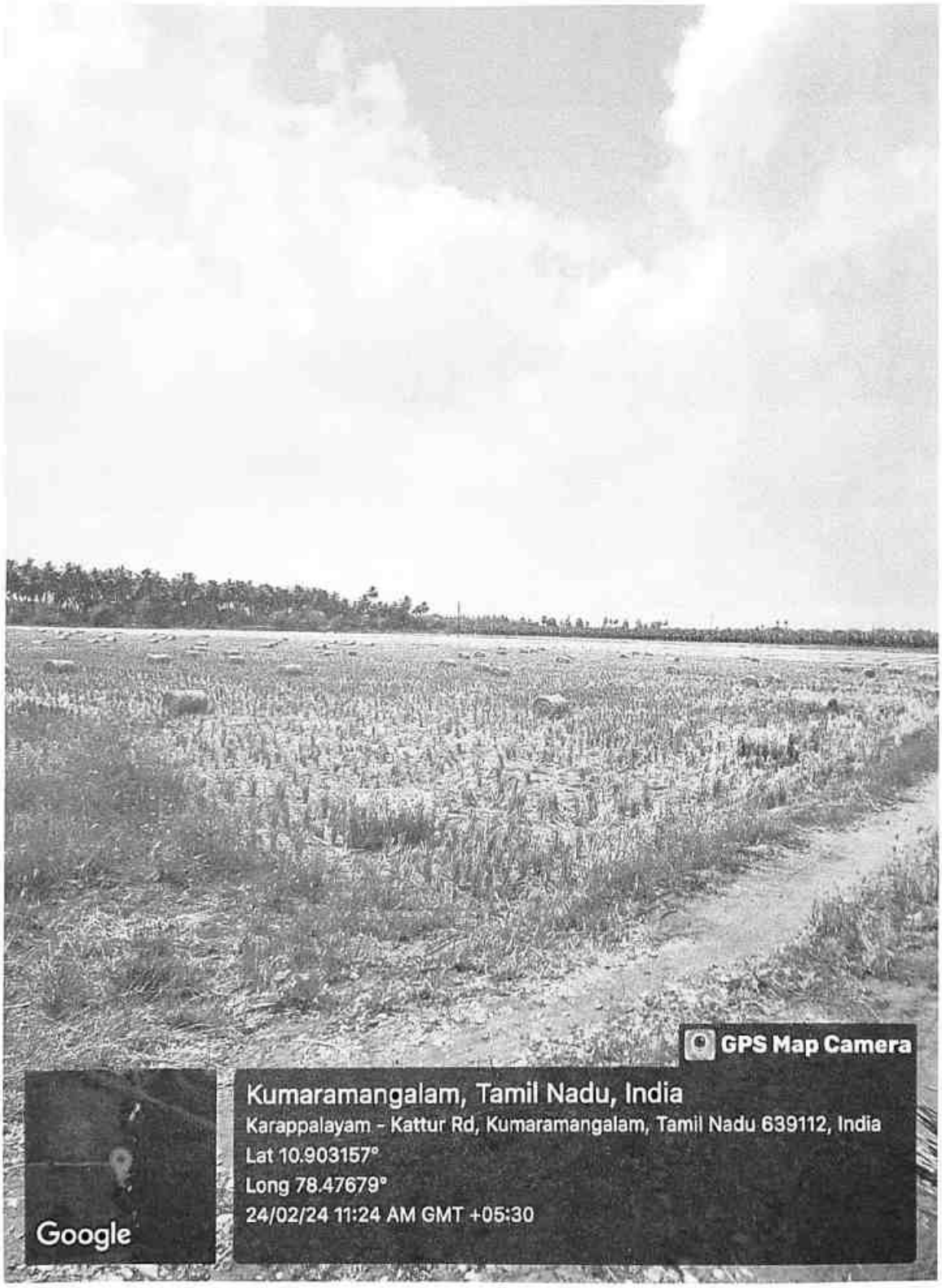
Document No. 792 of 2024 of Book 1 Contains 19 Sheets 17 Sheet

Registering Officer


भारत सरकार
Government of India
ஜீலான் பாஷா S
Jeelan Basha S
பிறந்த நாள் / DOB : 07/03/1980
ஆண் / Male
Aadhaar is proof of identity, not of citizenship or date of birth. It should be used with verification (online authentication, or scanning of QR code / offline XML).
5189 1339 3001
मेरा आधार, मेरी पहचान


Unique Identification Authority of India
முகவரி: S/O ஷேக் முகமது, 3/501-சி-2,
அன்பு நகர், அவலப்பள்ளி ரோடு,
ஒசூர், கிருஷ்ணகிரி, தமிழ் நாடு, 635109
Address: S/O Shaik Mahamood, 3/501-c-2,
Anbu Nagar, Avalapalli Road, Hosur,
PO:Hosur, DIST:Krishnagiri, Tamil Nadu,
635109
5189 1339 3001
1947 help@uidai.gov.in www.uidai.gov.in

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Contains 19 Sheets 18 Sheet
Registering Officer



For M/s.Greenergy Pure Ethanol
Private Limited

Manager/Authorized Signatory

Document No. 792 of 2024 of Book 1
..... Contains 19 Sheets 19 Sheet

Registering Officer

793/2024

भारतीय गैर न्यायिक

एक सौ रुपये

Rs. 100

ONE HUNDRED RUPEES

रु. 100

सत्यमेव जयते

भारत INDIA

INDIA NON JUDICIAL

தமிழ்நாடு तमिलनाडु TAMILNADU 16 FEB 2024

M/s. Greenergy Pure Ethanol Pvt. Ltd.
Bangalore.

DW 568442

அ. ஷம்ஷாத், மு.வி
தொழிலாளர் நீதி மன்றம்
மாவட்ட நீதி மன்ற வளாகம்
[illegible] 620000, திருச்சி
செல் எண்: 93451 61811

SALE DEED

This Deed of Absolute Sale made and executed at Kulithalai on this 26th day of February, 2024.

Mr. P.Ganesh, Son of Mr. Panneer Selvam, aged about 34 years, formerly residing at Door No.333, Thirumurugan Nagar, Pettavaithalai, Srirengam Taluk, Trichirapalli District and now residing at Door No.19/1, Nehruji Street, Nadar Medu, Erode Taluk & District - 638002, Tamil Nadu **(Id Aadhar No.6800 2116 8014 & PAN - BFCPG0222E)** herein after called the 'VENDOR'.

PURCHASER

For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

VENDOR

Document No. 793 of 2024 of Book 1 Contains 20 Sheets 1 Sheet

Registering Officer

To and In-Favor of **M/s.GREENERGY PURE ETHANOL PRIVATE LIMITED, (PAN - AAJCG8851F)** registered under the Companies Act vide CIN - U24200KA2022PTC163272, having Office at No.324, 1st Floor, Golden Point, 4, Vasant Nagar, Bangalore - 560051, State of Karnataka, represented by its Manager/Authorized Signatory, **Mr. Thota Kiran Kumar,** S/o. Naga Venkata Siva Sai Gangathara Rao, (Id Aadhar No.4285 8191 7541) authorized under Board Resolution dated 05.02.2024 by M/s. Greenergy Pure Ethanol Private Limited, herein after called the 'PURCHASER'

The terms VENDOR and PURCHASER, wherever it may occur shall mean and include themselves, their heirs, legal representatives, executors, administrators and assigns.

This Deed of Sale Witnesseth as follows:-

Whereas the VENDOR is the sole, legal, true absolute and exclusive Owner of the property viz., **Lands in Survey Nos.68/1A, 70, 68/1B presently comprised in New Survey No.68/1A1, 70/1, 68/1B1 of Kumaramangalam Village Total Extent of Acre 3.77 Cents** which is more fully and particularly described in the schedule hereunder, which he has purchased from and out of his own funds and his name from Mrs.Devakunjari on 24.01.2019 under a Registered Sale Deed bearing **Document No.160/2019** in Book 1 on the file of the Sub Registrar Office, Kulithalai, Karur District.

Ever since the VENDOR has been in continuous, uninterrupted peaceful possession and enjoyment of the said property, with full powers of alienation, without any let or hindrances, paying all taxes and outgoing payable to the Government and Local Authorities and has got valid and marketable title to the said property.

And Whereas the VENDOR has offered to sell the Schedule mentioned property and the Purchaser has also accepted to buy the Schedule mentioned property

PURCHASER

For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

Document No. 793 of 2024 of Book 1 Contains 20 Sheets 2 Sheet

Registrar

VENDOR

For a net Sale Consideration of Rs.56,55,000/- (Rupees Fifty Six Lakhs Fifty Five Thousand Only), free from all encumbrances, for which sum the VENDOR has also agreed to convey the Sale of Schedule mentioned Property, unto the Purchaser free from all encumbrances.

Whereas after deducting the TDS of 1% i.e., Rs.56,550/- from the above said amount, the VENDOR has received the entire Sale Consideration of the sum of Rs.55,98,450/- (Rupees Fifty Five Lakhs Ninety Eight and Four Hundred Fifty Only) from the Purchaser with full satisfaction by way of Demand Draft drawn on Union Bank of India, Bangalore Cantonment Branch, Bangalore vide D.D.No.961837 dated 23.02.2024.

NOW THIS DEED OF ABSOLUTE SALE WITNESSETH AS FOLLOWS:-

In pursuance of the above said mutually agreed terms and in consideration of the above said sum of Rs.55,98,450/- (Rupees Fifty Five Lakhs Ninety Eight and Four Hundred Fifty Only) already paid by the PURCHASER to the VENDOR as stated above, the VENDOR doth hereby sell, convey, grant, transfer and assign, by way of absolute sale to and in favor of the Purchaser herein the Sale Property which is more fully and particularly described in the schedule hereunder, together with all ways, waters, water courses, ditches easements, advantages, liberties, rights and privileges, and all other appurtenances whatsoever appertaining thereto, to have and to hold the same as absolute owner with all powers of alienation,

THE VENDOR DOTH HEREBY FURTHER COVENANT WITH THE PURCHASER AS FOLLOWS:-

I) The VENDOR is the sole and absolute OWNER of the property hereby conveyed and that he has perfect right, title and interest to convey the said property to the Purchaser in the manner aforesaid and no other person has got any right, title and interest to convey the said property to the Purchaser in the manner aforesaid.

PURCHASER

For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

Document No. 793 of 2024 of Book 1 Contains 20 Sheets 3 Sheet

Registering Officer

VENDOR

II) The VENDOR doth hereby declare that hereafter the VENDOR nor his heirs has got any manner of Right, Title or Interest over the property hereby sold. Even if anybody claims any such right, such claim shall be null and void.

III) The VENDOR doth hereby declare that there are no encumbrance, lien, trust, attachment, claim, charge, whatsoever which is subsisting on the said property and that the said property is not the subject matter of any litigation or proceedings and is not charged in favour of any Court, Revenue or other authority. If, However, there happen to be any encumbrances or litigation over the property and are disclosed at a later date, the VENDOR undertakes to clear them at his own cost and own motion and also shall compensate the Purchaser if any losses or expenses if any, the Purchaser may be put to, owing to the existence of such encumbrances and defects binding the VENDOR's other properties movable and immovable and also binding himself personally.

IV) The VENDOR doth hereby covenant with the Purchaser that the Purchaser shall and may at all times hereafter quietly and peacefully possess and enjoy the said property without any let or interruption or disturbances by the VENDOR or by any one claiming through him.

V) The VENDOR doth hereby covenant with the Purchaser that he and all persons lawfully and equitably claiming title will from time to time and at all times hereafter at the cost of the Purchaser execute and register all such acts, deeds and things for further and more perfectly assuring the title of the Purchaser in respect of the property hereby conveyed.

VI) The VENDOR doth hereby covenant with the Purchaser that he shall sign and execute any rectification at the expenses of purchaser that may be necessary in order to make this sale absolute.

PURCHASER

For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

VENDOR

Document No. 793 of 2024 of Book 1 Contains 20 Sheets 4 Sheet

Registering Officer

VII) The VENDOR doth hereby covenant with the Purchaser that he has, this day handed over to the Purchaser all documents and records pertaining to the title of the schedule mentioned property.

VIII) The VENDOR doth hereby declare that all taxes and other public charges payable in respect of the schedule mentioned property hereby conveyed has been paid up to this date and further covenant with the Purchaser that there are no arrears of tax payable to Government or local body.

IX) The VENDOR doth hereby declare and assure the Purchaser that he shall indemnify and shall keep indemnified the Purchaser against any loss or damage that the Purchaser may be put to by reason of any kind of encumbrance over the property.

X) The VENDOR hereby expressly declares that the sale of property mentioned in the schedule hereunder is not in violation of any law.

XI) The VENDOR doth hereby covenant with the Purchaser that he shall sign and execute any rectification at the expenses of purchaser that may be necessary in order to make this sale absolute.

XII) The VENDOR doth hereby covenant with the Purchaser that he shall also sign and execute any letter or form that may be required for the mutation of name in the revenue records and transfer of Patta in favour of the Purchaser or for such other purposes.

To this effect, the VENDOR has executed this Deed of Absolute Sale on the day, month and year first above mentioned in the presence of following witnesses.

SCHEDULE OF PROPERTY

Karur District, Karur Registration District, Kulithalai Sub-Registration District, Kulithalai Taluk,

PURCHASER

VENDOR

For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

Document No. 793 of 2024 of Book 1 Contains 20 Sheets 5 Sheet

Registering Officer

1) Within the limits of Kumaramangalam Village, in Ayan Nanja Survey No.68/1A in Land measuring **Acre 1.27 Cents** (Equal to Hectare 0.51.5) out of Acre 2.54 Cents (equal to Hectare 1.03.0)

North by : Railway Line
East by : Lands belongs to Panner Selvam
South by : Lands in Survey No.68/1B
West by : Lands purchased by Aarthi

Within this Four Boundaries, Total Extent of **Acre 1.27 Cents**

2) Within the limits of Kumaramangalam Village, in Ayan Nanja Survey No.70 in Land measuring **Acre 1.00 Cents** (Equal to Hectare 0.40.5) out of Acre 3.18 Cents (equal to Hectare 1.28.5)

North by : Lands in Survey No.68/1B
East by : Lands belongs to Panneer Selvam
South by : Pathway and Vadivu Canal
West by : Lands purchased by Aarthi

Within this Four Boundaries, Total Extent of **Acre 1.00 Cents**

3) Within the limits of Kumaramangalam Village, in Ayan Nanja Survey No.70 in Land measuring **Acre 0.60 Cents** (Equal to Hectare 0.24.29) out of Acre 3.18 Cents (Equal to Hectare 1.28.5)

North by : Lands Purchased by by Panneer Sevam & others
East by : Lands belongs to Panner Selvam
South by : East to West Parthway
West by : Lands purchased by Aarthi

Within this Four Boundaries, Total Extent of **Acre 0.60 Cents**

4) Within the limits of Kumaramangalam Village, in Ayan Nanja Survey No.68/1B in Land measuring **Acre 0.90 Cents** (Equal to Hectare 0.36.25) out of Acre 1.80 Cents (equal to Hectare 0.72.5)

PURCHASER

For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

Document No. 793 of 2024 of Book 1 Contains 20 Sheets 6 Sheet

Registering Officer

VENDOR

North by : Lands Purchased by Panneer Selvam

East by : Lands belongs to Panner Selvam

South by : Lands Purchased by Ganesh

West by : Lands purchased by Aarthi

Within this Four Boundaries, Total Extent of **Acre 0.90 Cents**

Total Extent of above said Lands in Item Nos.1, 2, 3 & 4 is **Acre 3.77 Cents (Equal to Hectare 1.53.0)**_together with the pathway, easement, canal and irrigation rights etc.,

The Property lies within the limits of Kulithalai Taluk and presently comprised in of Kumaramangalam Village vide Patta No.1078, 1076 & 1085 respectively.

The Present market value of the Property is Rs.56,55,000/-.

VENDOR

PURCHASER
For M/s.Greenergy Pure Ethanol Private Limited

Authorised

Manager/Authorized Signatory

Witnesses:

1. **(Panneer Selvam)**, S/o. Chinnappa Gounder, Door No.333, Thirumurugan Nagar, Pettavaithalai, Srirengam Taluk, Trichirapalli District - 639112. (Aadhar No.2618 2306 7865)

2. **(Jeelan Basha),** S/o. Shaik Mahamood, Door No.3/501-C-2, Anbu Nagar, Avalappalli Road, Hosur - 635109, Krishnagiri Dt. (Aadhar No.5189 1339 3001)



Drafted by:-

J.KAJA MOIDEEN,B.A.,M.L.,
Advocate, (Roll No.Ms3654/2010)
#71, 1st Floor, EVR Road,
Puthur, Trichy-620017.
Cell No. 99408-71076.

Document No. 793 of 2024 of Book 1 Contains 20 Sheets 7 Sheet

Registering Officer

The Statement Under Rule 3 (1) of Tamil Nadu Stamp (Prevention of Undervaluation of Instruments) Rules 1968

District:- Karur — Kulithalai S.R.O

Taluk :- Kulithalai — Village:- Kumaramangalam

Serial No	Survey No	Extent Acre - Cents	Nature of Property	Market Value
1	68/1A1	1 . 27	Nanja	Rs.19,05,000/-
2	70/1	1 . 00	Punja	Rs.15,00,000/-
3	70/1	0 . 60	Punja	Rs. 9,00,000/-
4	68/1B1	0 . 90	Nanja	Rs.13,50,000/-
Total		**Acre 3 . 77 Cents**		**Rs.56,55,000/-**

DECLARATION

Affidavit that the Property is not situated in water body area.

(Declaration according to Judgment in W.P.(MD)No.22163/2018)

We certify that the property identified in this document is not comes under the category of water bodies, waterways or catchment areas.

We also understand that we may be subject to legal action if we are later found to have misrepresented or misrepresented them.

PURCHASER

For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

VENDOR

Document No. 793 of 2024 of Book 1 Contains 20 Sheets 8 Sheet

Registering Officer

R/Kulithalai/Book-1/793/2024

CERTIFICATE UNDER SECTION 42 OF THE INDIAN STAMP ACT 1899

S.No 602 of 2024

I hereby certify that a sum of ₹ 3,95,750/- (Rupees Three Lakh Ninty Five Thousand Seven Hundred and Fifty only) on account of deficit stamp duty has been levied under section 41 of the Stamp Act in respect of this instrument from Mr. தோட்டா கிரண் குமார் residing at No.324, 1st Floor, Golden Point, 4, Vasant Nagar, Bangalore, Karnataka, India, 560051.

Sub Registrar Kulithalai
Date 26/02/2024

Signature of Sub Registrar and Collector under Section 41 of the Indian Stamp Act

Presented in the office of the Sub Registrar of Kulithalai and fee of ₹ 1,15,810/- paid at 05:38 PM on the 26/02/2024 by

Left Thumb





For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

Additions as per recitals of document

Execution admitted by

Left Thumb





Identity of the person verified through Consent based AADHAAR Authentication using Thumb Impression with UIDAI reference No. : UKC:90890673e907376f774272bcb100e41d746017
(Details from UIDAI : P Ganesh PANNEERSELVAM C, 1989, xxxxxxxx8014)



Claim admitted by

Left Thumb





For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

Identity of the person verified through Consent based AADHAAR Authentication using Thumb Impression with UIDAI reference No. : UKC:368747d373ea9b04cc4948a2742a8c67e9646e
(Details from UIDAI : Thota Kiran Kumar S/O Naga



Document No. 793 of 2024 of Book 1
Contains 2 pages Sheet

Registering Officer

	Venkata Siva Sai Gangadhara Rao, 05-06-1992, xxxxxxxx7541)	

26th day of February 2024

krishnan marappan
Sub Registrar
Kulithalai

Registered as Number **R/Kulithalai/Book-1/793/2024**

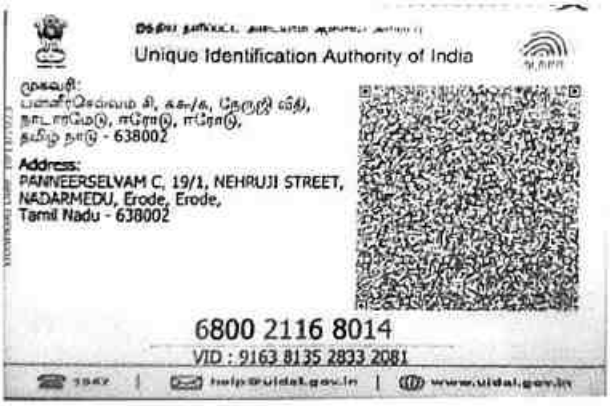
Date: 26/02/2024
Kulithalai

krishnan marappan
Sub Registrar

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Registering Officer







For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

Document No. 793 of 2024 of Book 1 Contains 20 Sheets 11 Sheet

Registering Officer

भारत सरकार
Government of India

आधार

भारतीय विशिष्ट पहचान प्राधिकरण
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Enrolment No.: 0647/02766/07908

To
Thota Kiran Kumar
S/O Naga Venkata Siva Sai Gangadhara Rao
1-188-28
siva ganga
siva ganga
Machilipatnam
Krishna Andhra Pradesh - 521001
9071357624

आपका आधार क्रमांक / Your Aadhaar No. :

4285 8191 7541

VID : 9166 9218 3186 3447

मेरा आधार, मेरी पहचान

Government of India

AADHAAR

सूचना

- आधार पहचान का प्रमाण है, नागरिकता का नहीं।
- सुरक्षित QR कोड / ऑफलाइन XML / ऑनलाइन ऑथेंटिकेशन से पहचान प्रमाणित करें।
- यह एक इलेक्ट्रॉनिक प्रक्रिया द्वारा बना हुआ पत्र है।

INFORMATION

- Aadhaar is a proof of identity, not of citizenship.
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- आधार देश भर में मान्य है।
- आधार कई सरकारी और गैर सरकारी सेवाओं को पाना आसान बनाता है।
- आधार में मोबाइल नंबर और ईमेल ID अपडेट रखें।
- आधार को अपने स्मार्ट फोन पर रखें, mAadhaar App के साथ।

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भारत सरकार
Government of India

आधार



Thota Kiran Kumar
Date of Birth/DOB: 05/06/1992
Male/ MALE

Issue Date: 11/12/2011

4285 8191 7541

VID : 9166 9218 3186 3447

मेरा आधार, मेरी पहचान

भारतीय विशिष्ट पहचान प्राधिकरण
Unique Identification Authority of India

AADHAAR

Address:
S/O Naga Venkata Siva Sai Gangadhara Rao,
1-188-28, siva ganga, siva ganga,
Machilipatnam, Krishna,
Andhra Pradesh - 521001

Download Date: 31/01/2023

4285 8191 7541

VID : 9166 9218 3186 3447

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For M/s.Greenergy Pure Ethanol Private Limited

Authorised

Manager/Authorized Signatory

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Registering Officer

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सत्यमेव जयते

GOVERNMENT OF INDIA
MINISTRY OF CORPORATE AFFAIRS

Central Registration Centre

Certificate of Incorporation

[Pursuant to sub-section (2) of section 7 and sub-section (1) of section 8 of the Companies Act, 2013 (18 of 2013) and rule 18 of the Companies (Incorporation) Rules, 2014]

I hereby certify that GREENERGY PURE ETHANOL PRIVATE LIMITED is incorporated on this First day of July Two thousand twenty-two under the Companies Act, 2013 (18 of 2013) and that the company is limited by shares.

The Corporate Identity Number of the company is U24200KA2022PTC163272.

The Permanent Account Number (PAN) of the company is **AAJCG8851F** *

The Tax Deduction and Collection Account Number (TAN) of the company is **BLRG29460E** *

Given under my hand at Manesar this First day of July Two thousand twenty-two .

Digital Signature Certificate
SHIVARAJ C RANJERI
ASST. REGISTRAR OF COMPANIES
For and on behalf of the Jurisdictional Registrar of Companies
Registrar of Companies
Central Registration Centre

Disclaimer: This certificate only evidences incorporation of the company on the basis of documents and declarations of the applicant(s). This certificate is neither a license nor permission to conduct business or solicit deposits or funds from public. Permission of sector regulator is necessary wherever required. Registration status and other details of the company can be verified on www.mca.gov.in

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Mailing Address as per record available in Registrar of Companies office:

GREENERGY PURE ETHANOL PRIVATE LIMITED
No.324, 1st Floor, Golden Point 4,, Vasnat Nagar, Bengaluru, Bangalore,
Karnataka, India, 560051

* as issued by the Income Tax Department

For M/s.Greenergy Pure Ethanol Private Limited

Authorised

Manager/Authorized Signatory

Document No. 793 of 2024 of Book 1 Contains 20 sheets 13 Sheet

Registering Officer

GREENERGY PURE ETHANOL PRIVATE LIMITED

Regd. Off: No.324, Golden Point 4, Off. Queens Road Cross, Vasant Nagar, Bengaluru 560052, KA, IN

Ph: 080- 49222222 II Email: cs@goldengrp.co.in II CIN: U24200KA2022PTC163272

CERTIFIED TRUE COPY OF THE RESOLUTION PASSED AT THE MEETING OF THE BOARD OF DIRECTORS OF GREENERGY PURE ETHANOL PRIVATE LIMITED HELD AT THE REGISTERED OFFICE OF THE COMPANY ON 5TH FEBRUARY 2024 AT 9.00 AM

SUB: AUTHORIZATION FOR PURCHASE OF LANDS IN THE NAME OF COMPANY

RESOLVED THAT pursuant to applicable provisions of Companies Act, 2013 and other applicable statutory rules and regulations and subject to approval of government authorities, the approval of the Board of Directors, be and is hereby accorded to the Company to purchase parcels of Lands as detailed below and indicated in the Site Plans in terms of agreements proposed to be entered into by the Company and for consideration as agreed between the parties to agreements.

1. Lands in Survey Nos. 63, 65/2, 65/3 presently comprised in New Survey Nos. 63/2, 65/2 & 65/3B of Kumaramangalam Village, total extent of Acre 5.60 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.
2. Lands in Survey Nos. 68/1A, 70, 68/1B, presently comprised in New Survey Nos. 68/1A1, 70/1 & 68/1B1 of Kumaramangalam Village, total extent of Acre 3.77 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.
3. Lands in Survey No. 63 presently comprised in New Survey No. 63/1 of Kumaramangalam Village, total extent of Acre 2.00 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.
4. Lands in Survey Nos. 63, 65/1, 65/3 presently comprised in New Survey Nos. 63/1, 65/1 & 65/3A of Kumaramangalam Village, total extent of Acre 3.60 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.
5. Lands in Survey No. 67 of Kumaramangalam Village, total extent of Acre 0.98 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.
6. Lands in Survey Nos. 68/1A, 70 presently comprised in New Survey Nos. 68/1A2, 70/2 of Kumaramangalam Village, total extent of Acre 2.85 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.
7. Lands in Survey No. 68/1B of Kumaramangalam Village, total extent of Acre 0.90 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.
8. Lands in Survey Nos. 68/2, 69/2, 69/1, 72/2 of Kumaramangalam Village, total extent of Acre 2.35 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.

RESOLVED FURTHER THAT Mr.Thota Kiran Kumar, S/o. Mr. Naga Venkata Sai Siva Gangadhara Rao Thota, bearing PAN ASWPT6006F and Aadhar No 428581917541;Manager of the Company; be and is hereby authorized to communicate on behalf of the company with their Vendor, Government Officials and to represent the company before the concerned Sub Registrar Office, to sign the sale agreements and sale deeds on behalf of the company and to get register the Sale

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Contains 20 Sheets 14 Sheet

For Greenergy Pure Ethanol Pvt Ltd

Registering Officer / Authorised Signatory

For M/s.Greenergy Pure Ethanol Private Limited

Authorised

Manager/Authorized Signatory

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தமிழ்நாடு அரசு

வருவாய்த் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

மாவட்டம் : கரூர் வட்டம் : குளித்தலை

வருவாய் கிராமம் : குமாரமங்கலம் பட்டா எண் : **1078**

உரிமையாளர்கள் பெயர்

1. பன்னீர்செல்வம் மகன் கணேஷ்

புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	
63	1	--	--	1 - 21.00	28.40	--	--	2019/0105/14/019203--2019/14/03/000015SD -- 16-08-2019
65	3A	--	--	0 - 98.50	23.12	--	--	2019/0105/14/025349--2019/14/03/000020SD -- 20-08-2019
68	1A1	--	--	0 - 51.50	12.09	--	--	2019/0105/14/025276--2019/14/03/000021SD -- 20-08-2019
				2 - 71.00	63.61			

குறிப்பு2 :

1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் **https://eservices.tn.gov.in** என்ற இணைய தளத்தில் **14/03/001/01078/30116** என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 22-02-2024 அன்று 09:40:41 AM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின்2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

For M/s.Greenergy Pure Ethanol Private Limited

Authorised

Manager/Authorized Signatory

Document No. 793 of 2024 of Book
1 Contains 20 Sheets 15 Sheet

Registering Officer

தமிழ்நாடு அரசு

வருவாய்த் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

வட்டம் : குளித்தலை

மாவட்டம் : கரூர்

பட்டா எண் : **1076**

வருவாய் கிராமம் : குமாரமங்கலம்

உரிமையாளர்கள் பெயர்

1. பன்னீர்செல்வம் மகன் கணேஷ்

புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	
70	1	0 - 64.79	15.21	--	--	--	--	2019/0105/14/019207--2019/14/03/000014SD -- 16-08-2019
		0 - 64.79	15.21					

குறிப்பு2 :

1.	மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் **https://eservices.tn.gov.in** என்ற இணைய தளத்தில் **14/03/001/01076/30194** என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
2.	இத் தகவல்கள் 22-02-2024 அன்று 09:46:47 AM நேரத்தில் அச்சடிக்கப்பட்டது.
3.	கைப்பேசி கேமராவின்2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

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Registering Officer

தமிழ்நாடு அரசு

வருவாய்த் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

மாவட்டம் : கரூர்

வட்டம் : குளித்தலை

வருவாய் கிராமம் : குமாரமங்கலம்

பட்டா எண் : 1085

உரிமையாளர்கள் பெயர்

1. பன்னீர்செல்வம் மகன் கணேஷ்

புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	
68	1B1	--	--	0 - 36.25	8.51	--	--	2019/0105/14/025274--2019/14/03/000019SD -- 20-08-2019
				0 - 36.25	8.51			

குறிப்பு2 :

1.	மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் https://eservices.tn.gov.in என்ற இணைய தளத்தில் 14/03/001/01085/30184 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
2.	இத் தகவல்கள் 22-02-2024 அன்று 09:45:26 AM நேரத்தில் அச்சடிக்கப்பட்டது.
3.	கைப்பேசி கேமராவின்2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

For M/s.Greenergy Pure Ethanol Private Limited

Authorised

Manager/Authorized Signatory

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Registering Officer





C Panneerselvam

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Contains 20 Sheets 18 Sheet
Registering Officer



भारत सरकार
Government of India

ஜீலான் பாஷா S
Jeelan Basha S
பிறந்த நாள் / DOB : 07/03/1980
ஆண் / Male

Aadhaar is proof of identity, not of citizenship or date of birth. It should be used with verification (online authentication, or scanning of QR code / offline XML).

5189 1339 3001

मेरा आधार, मेरी पहचान



भारतीय विशिष्ट पहचान प्राधिकरण
Unique Identification Authority of India

முகவரி: S/O ஷேக் முகமது, 3/501-சி-2, அண்ணா நகர் ஆவலப்பள்ளி ரோடு, ஓசூர் கிருஷ்ணகிரி தமிழ் நாடு, 635109
Address: S/O Shaik Mahamood, 3/501-c-2, Anna Nagar, Avalapalli Road, Hosur, PO:Hosur, DIST:Krishnagiri, Tamil Nadu, 635109

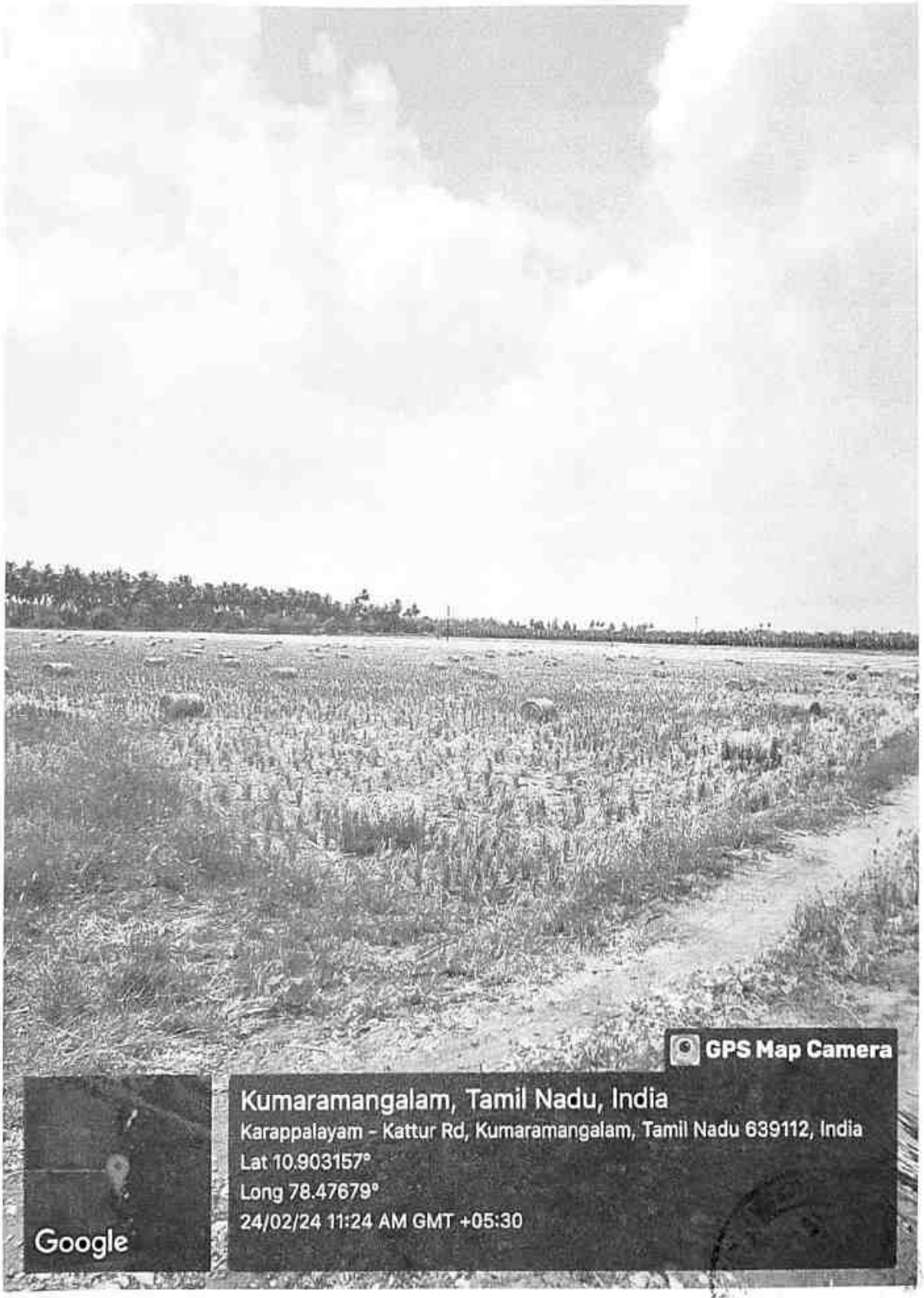
5189 1339 3001

1947 help@uidai.gov.in www.uidai.gov.in

J. Jeelan

Document No. 793 of 2024 of Book 1 Contains 20 Sheets 19 Sheet

Registering Officer



For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

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Contains 20 sheets 20 Sheet

Registering Officer

833/2024

भारतीय गैर न्यायिक

एक सौ रुपये Rs. 100

रु. 100 ONE HUNDRED RUPEES

सत्यमेव जयते

भारत INDIA

INDIA NON JUDICIAL

தமிழ்நாடு तमिलनाडु TAMILNADU 16 FEB 2024

DW 568449

M/s. Greenergy Pure Ethanol Pvt., Ltd.,
Bangalore.

அ. ஜெகநாத்,
அ. ஜெகநாத், மு.வி
தொழிலாளர் நீதி மன்றம்
மாவட்ட நீதி மன்ற வளாகம்
எண்: 2/2000, திருச்சி
செல் எண்: 93451 61811

SALE DEED

This Deed of Absolute Sale made and executed at Kulithalai on this 26th day of February, 2024.

Mr. Panneer Selvam, S/o.Chinnappa Gounder, residing at No.333, Thirumurugan Nagar, Pettavaithalai, Srirengam Taluk, Trichirapalli District. Tamil Nadu **(Aadhaar No.2618 2306 7865 & Pan No.AHMPP3008J)** herein after called the 'VENDOR'.

PURCHASER

For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

VENDOR

Document No. 833 of 2024 of Book 1 Contains 19 Sheets 1 Sheet

Registering Officer

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To and In-Favor of **M/s.GREENERGY PURE ETHANOL PRIVATE LIMITED, (PAN - AAJCG8851F)** registered under the Companies Act vide CIN - U24200KA2022PTC163272, having Office at No.324, 1st Floor, Golden Point, 4, Vasant Nagar, Bangalore - 560051, State of Karnataka, represented by its Manager/Authorized Signatory, **Mr. Thota Kiran Kumar,** S/o. Naga Venkata Siva Sai Gangathara Rao, (Id Aadhar No.4285 8191 7541) authorized under Board Resolution dated 05.02.2024 by M/s. Greenergy Pure Ethanol Private Limited, herein after called the' PURCHASER'

The terms VENDOR and PURCHASER, wherever it may occur shall mean and include themselves, their heirs, legal representatives, executors, administrators and assigns.

This Deed of Sale Witnesseth as follows

Whereas the VENDOR is the sole, legal, true absolute and exclusive Owner of the property viz., **Lands in Survey Nos.68/1A & 70 and presently comprised in New Survey Nos.68/1A2 & 70/2 of Kumaramangalam Village Total Extent of Acre 2.85 Cents** which is more fully and particularly described in the schedule hereunder, which he has purchased from and out of his own funds and his name from Mrs.Sornavadivi on 15.04.2004 under a Registered Sale Deed bearing **Document No.550/2004** in Book 1 on the file of the Sub Registrar Office, Kulithalai, Karur District.

Ever since the VENDOR has been in continuous, uninterrupted peaceful possession and enjoyment of the said property, with full powers of alienation, without any let or hindrances, paying all taxes and outgoing payable to the Government and Local Authorities and has got valid and marketable title to the said property.

And Whereas the VENDOR has offered to sell the Schedule mentioned property and the Purchaser has also accepted to buy the Schedule mentioned property

PURCHASER

For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

Document No. 833 of 2024 of Book 1 Contains 19 Sheets 2 Sheet

Registering Officer

VENDOR

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For a net Sale Consideration of Rs.42,75,000/- (Rupees Forty Two Lakhs Seventy Fifty Thousand Only), free from all encumbrances, for which sum the VENDOR has also agreed to convey the Sale of Schedule mentioned Property, unto the Purchaser free from all encumbrances.

Whereas after deducting the TDS of 1% i.e., Rs.42,750/- from the above said amount, the VENDOR has received the entire Sale Consideration of the sum of Rs.42,32,250/- (Rupees Forty Two Lakhs Thirty Two Thousand and Two Hundred Fifty Only) from the Purchaser with full satisfaction by way of Demand Draft drawn on Union Bank of India, Bangalore Cantonment Branch, Bangalore vide D.D.No.836094 dated 26.02.2024.

NOW THIS DEED OF ABSOLUTE SALE WITNESSETH AS FOLLOWS:-

In pursuance of the above said mutually agreed terms and in consideration of the above said sum of Rs.42,32,250/- (Rupees Forty Two Lakhs Thirty Two Thousand and Two Hundred Fifty Only) already paid by the PURCHASER to the VENDOR as stated above, the VENDOR doth hereby sell, convey, grant, transfer and assign, by way of absolute sale to and in favor of the Purchaser herein the Sale Property which is more fully and particularly described in the schedule hereunder, together with all ways, waters, water courses, ditches easements, advantages, liberties, rights and privileges, and all other appurtenances whatsoever appertaining thereto, to have and to hold the same as absolute owner with all powers of alienation,

THE VENDOR DOTH HEREBY FURTHER COVENANT WITH THE PURCHASER AS FOLLOWS:-

I) The VENDOR is the sole and absolute OWNER of the property hereby conveyed and that he has perfect right, title and interest to convey the said property to the Purchaser in the manner aforesaid and no other person has got any right, title and interest to convey the said property to the Purchaser in the manner aforesaid.

PURCHASER

For M/s.Greenergy Pure Ethanol Private Limited

Authorised Signatory

Manager/Authorized Signatory

VENDOR

Document No. 833 of 2024 of Book 1 Contains 19 Sheets 3 Sheet

Registering Officer

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II) The VENDOR doth hereby declare that hereafter the VENDOR nor his heirs has got any manner of Right, Title or Interest over the property hereby sold. Even if anybody claims any such right, such claim shall be null and void.

III) The VENDOR doth hereby declare that there are no encumbrance, lien, trust, attachment, claim, charge, whatsoever which is subsisting on the said property and that the said property is not the subject matter of any litigation or proceedings and is not charged in favour of any Court, Revenue or other authority. If, However, there happen to be any encumbrances or litigation over the property and are disclosed at a later date, the VENDOR undertakes to clear them at his own cost and own motion and also shall compensate the Purchaser if any losses or expenses if any, the Purchaser may be put to, owing to the existence of such encumbrances and defects binding the VENDOR's other properties movable and immovable and also binding himself personally.

IV) The VENDOR doth hereby covenant with the Purchaser that the Purchaser shall and may at all times hereafter quietly and peacefully possess and enjoy the said property without any let or interruption or disturbances by the VENDOR or by any one claiming through him.

V) The VENDOR doth hereby covenant with the Purchaser that he and all persons lawfully and equitably claiming title will from time to time and at all times hereafter at the cost of the Purchaser execute and register all such acts, deeds and things for further and more perfectly assuring the title of the Purchaser in respect of the property hereby conveyed.

VI) The VENDOR doth hereby covenant with the Purchaser that he shall sign and execute any rectification at the expenses of purchaser that may be necessary in order to make this sale absolute.

PURCHASER **VENDOR**

For M/s.Greenergy Pure Ethanol Private Limited

Authorised Signatory

Manager/Authorized Signatory

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Registering Officer

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VII) The VENDOR doth hereby covenant with the Purchaser that he has, this day handed over to the Purchaser all documents and records pertaining to the title of the schedule mentioned property.

VIII) The VENDOR doth hereby declare that all taxes and other public charges payable in respect of the schedule mentioned property hereby conveyed has been paid up to this date and further covenant with the Purchaser that there are no arrears of tax payable to Government or local body.

IX) The VENDOR doth hereby declare and assure the Purchaser that he shall indemnify and shall keep indemnified the Purchaser against any loss or damage that the Purchaser may be put to by reason of any kind of encumbrance over the property.

X) The VENDOR hereby expressly declares that the sale of property mentioned in the schedule hereunder is not in violation of any law.

XI) The VENDOR doth hereby covenant with the Purchaser that he shall sign and execute any rectification at the expenses of purchaser that may be necessary in order to make this sale absolute.

XII) The VENDOR doth hereby covenant with the Purchaser that he shall also sign and execute any letter or form that may be required for the mutation of name in the revenue records and transfer of Patta in favour of the Purchaser or for such other purposes.

To this effect, the VENDOR has executed this Deed of Absolute Sale on the day, month and year first above mentioned in the presence of following witnesses.

SCHEDULE OF PROPERTY

Karur District, Karur Registration District, Kulithalai Sub-Registration District, Kulithalai Taluk,

PURCHASER

For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

VENDOR

Document No. 833 of 2024 of Book 1 Contains 19 Sheets 5 Sheet

Registering Officer

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1) Within limits of Kumaramangalam Village, in Ayan Nanja Survey No.68/1A in Land measuring **Acre 1.27 Cents** which is eastern side half share out of Acre 2.54 Cents (equal to Hectare 1.03.0)

North by	:	Railway Line
East by	:	Lands belongs to Arunachalam and others
South by	:	Lands belongs to Sorna vadivu
West by	:	Lands purchased by Lakshmanan

Within this Four Boundaries, Total Extent of **Acre 1.27 Cents**

2) Within limits of Kumaramangalam Village, in Ayan Nanja Survey No.70 in Land measuring **Acre 1.58 Cents** which is eastern side out of Acre 2.18 Cents comes under the Acre 3.18 Cents (equal to Hectare 1.28.5)

North by	:	Lands belongs to Sorna Vadivu
East by	:	Lands belongs to Arunachalam and others
South by	:	East-West Pathway
West by	:	Lands purchased by Lakshmanan

Within this Four Boundaries, Total Extent of **Acre 1.58 Cents**

Total Extent of above said Lands in Item Nos.1 & 2 is **Acre 2.85 Cents** together with the pathway, easement, canal and irrigation rights etc.,

The Property lies within the limits of Kulithalai Taluk and presently comprised in New Survey Nos.68/1A2 & 70/2 of Kumaramangalam Village vide Patta Nos.1 & 1077 respectively.

PURCHASER

For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

VENDOR

Document No. 833 of 2024 of Book 1 Contains 19 Sheets 6 Sheet

Registering Officer

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The Present market value of the Property is Rs.42,75,000/-.

PURCHASER
For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

VENDOR

Witnesses:

1. **(Ganesh)**, S/o. Panneer Selvam,
Door No.19/1, Nehruji Street, Nadar Medu, Erode Taluk & District – 638002.
(Aadhar No.6800 2116 8014)

2. **(Jeelan Basha),** S/o. Shaik Mahamood,
Door No.3/501-C-2, Anbu Nagar, Avalappalli Road, Hosur - 635109, Krishnagiri Dt.
(Aadhar No.5189 1339 3001)



Drafted by:-
J.KAJA MOIDEEN, B.A., M.L.,
Advocate, (Roll No.Ms3654/2010)
#71, 1st Floor, EVR Road,
Puthur, Trichy-620017.
Cell No. 99408-71076.

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The Statement Under Rule 3 (1) of Tamil Nadu Stamp (Prevention of Undervaluation of Instruments) Rules 1968

District:- Karur — Kulithalai S.R.O

Taluk :- Kulithalai — Village:- Kumaramangalam

Serial No	Survey No	Extent Acre - Cents	Nature of Property	Market Value
1	68/1A2	1 . 27	Nanja	Rs.19,05,000/-
2	70/2	1 . 58	Nanja	Rs. 23,70,000/-
Total		**Acre 2 . 85 Cents**		**Rs.42,75,000/-**

DECLARATION

Affidavit that the Property is not situated in water body area.

(Declaration according to Judgment in W.P.(MD)No.22163/2018)

We certify that the property identified in this document is not comes under the category of water bodies, waterways or catchment areas.

We also understand that we may be subject to legal action if we are later found to have misrepresented or misrepresented them.

PURCHASER

For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

VENDOR

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CERTIFICATE UNDER SECTION 42 OF THE INDIAN STAMP ACT 1899

S No 634 of 2024

I hereby certify that a sum of ₹ 2,99,250/- (Rupees Two Lakh Ninty Nine Thousand Two Hundred and Fifty only) on account of deficit stamp duty has been levied under section 41 of the Stamp Act in respect of this instrument from Mr. தோட்டா கிரண் குமார் residing at No.324, 1st Floor, Golden Point, 4, Vasant Nagar, Bangalore, Karnataka, India, 560051.

Sub Registrar Kulithalai
Date 27/02/2024

Signature of Sub Registrar and Collector under Section 41 of the Indian Stamp Act

Presented in the office of the Sub Registrar of Kulithalai and fee of ₹ 86,510/- paid at 04:56 PM on the 27/02/2024 by

Left Thumb





For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

Additions as per recitals of document

Execution admitted by
Left Thumb





Identity of the person verified through Consent based AADHAAR Authentication using Thumb Impression with UIDAI reference No. : UKC:019061f316e4913fb24a4fa65dca25a97635a1
(Details from UIDAI : Panneerselvam C , 07-01-1960, xxxxxxxx7865)



Claim admitted by
Left Thumb





For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

Identity of the person verified through Consent based AADHAAR Authentication using Thumb Impression with UIDAI reference No. : UKC:3339865a41afb725ff4b3cbedafa84f1a8cd1e
(Details from UIDAI : Thota Kiran Kumar, S/O



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Contains 10 Sheets 9 Sheet

1 / 2

Registering Officer

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	Naga Venkata Siva Sai Gangadhara Rao, 05-06-1992, xxxxxxxx7541)	

27th day of February 2024

krishnan marappan
Sub Registrar
Kulithalai

Registered as Number R/Kulithalai/Book-1/833/2024.

Date: 27/02/2024
Kulithalai

krishnan marappan
Sub Registrar

Document No. 833 of 2024 of Book 1 Contains 19 Sheets 10 Sheet

Registering Officer

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தமிழ்நாடு அரசு

வருவாய்த் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

மாவட்டம் : கரூர் வட்டம் : குளித்தலை

வருவாய் கிராமம் : குமாரமங்கலம் பட்டா எண் : 1

உரிமையாளர்கள் பெயர்

1. சின்னப்பகவுண்டர் மகன் பன்னீர்செல்வம்

புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	
68	2	0 - 47.00	2.75	--	--	--	--	D1414/118---- -- 24-07-2004
69	2	0 - 33.00	2.87	--	--	--	--	D1414/118---- -- 24-07-2004
68	1A2	--	--	0 - 51.50	12.09	--	--	2019/0105/14/025276--2019/14/03/000021SD -- 20-08-2019
68	1B2	--	--	0 - 36.25	8.51	--	--	2019/0105/14/025274--2019/14/03/000019SD -- 20-08-2019
		0 - 80.00	5.62	0 - 87.75	20.60			

குறிப்பு2 :

1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் https://eservices.tn.gov.in என்ற இணைய தளத்தில் 14/03/001/00001/30141 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 24-02-2024 அன்று 01:17:09 PM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின்2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

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Registering Officer

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தமிழ்நாடு அரசு

வருவாய்த் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

மாவட்டம் : கரூர் வட்டம் : குளித்தலை

வருவாய் கிராமம் : குமாரமங்கலம் பட்டா எண் : 1077

உரிமையாளர்கள் பெயர்

1. சின்னப்பகவுண்டர் மகன் பன்னீர்செல்வம்

புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	
70	2	0 - 63.71	14.95	--	--	--	--	2019/0105/14/019207--2019/14/03/000014SD -- 16-08-2019
		0 - 63.71	14.95					

குறிப்பு2 :

1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் https://eservices.tn.gov.in என்ற இணைய தளத்தில் 14/03/001/01077/30105 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 22-02-2024 அன்று 09:55:27 AM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின்2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

For M/s.Greenergy Pure Ethanol Private Limited

Authorised

Manager/Authorized Signatory

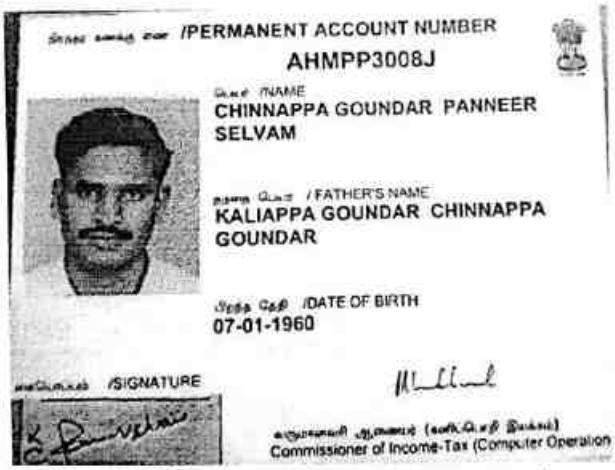
Document No. 833 of 2024 of Book 1 Contains 19 Sheets 2 Sheet

Registering Officer

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Document No. 833 of 2024 of Book 1
Contains 19 Sheets 13 Sheet

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भारत सरकार
Government of India

भारतीय विशिष्ट पहचान प्राधिकरण
Unique Identification Authority of India

Enrolment No.: 0647/02766/07908

To
Thota Kiran Kumar
S/O Naga Venkata Siva Sai Gangadhara Rao
1-188-28
siva ganga
siva ganga
Machilipatnam
Krishna Andhra Pradesh - 521001
9071357624

आपका आधार क्रमांक / Your Aadhaar No. :

4285 8191 7541

VID : 9166 9218 3186 3447

मेरा आधार, मेरी पहचान

Government of India

AADHAAR

सूचना

- आधार पहचान का प्रमाण है, नागरिकता का नहीं।
- सुरक्षित QR कोड / ऑफलाइन XML / ऑनलाइन ऑथेंटिकेशन से पहचान प्रमाणित करें।
- यह एक इलेक्ट्रॉनिक प्रक्रिया द्वारा बना हुआ पत्र है।

INFORMATION

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- Verify identity using Secure QR Code/ Offline XML/ Online Authentication.
- This is electronically generated letter.

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- आधार कई सरकारी और गैर सरकारी सेवाओं को पाना आसान बनाता है ।
- आधार में मोबाइल नंबर और ईमेल ID अपडेट रखें।
- आधार को अपने स्मार्ट फोन पर रखें, mAadhaar App के साथ।

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- Keep your mobile number & email ID updated in Aadhaar.
- Carry Aadhaar in your smart phone – use mAadhaar App.

भारत सरकार
Government of India



Thota Kiran Kumar
Date of Birth/DOB: 05/06/1992
Male/ MALE

Issue Date: 11/12/2011

4285 8191 7541

VID : 9166 9218 3186 3447

मेरा आधार, मेरी पहचान

भारतीय विशिष्ट पहचान प्राधिकरण
Unique Identification Authority of India

Address:
S/O Naga Venkata Siva Sai Gangadhara Rao,
1-188-28, siva ganga, siva ganga,
Machilipatnam, Krishna,
Andhra Pradesh - 521001

Download Date: 31/01/2023

4285 8191 7541

VID : 9166 9218 3186 3447

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For M/s.Greenergy Pure Ethanol Private Limited

Authorised Signatory

Manager/Authorized Signatory

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Registering Officer

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सत्यमेव जयते

GOVERNMENT OF INDIA
MINISTRY OF CORPORATE AFFAIRS

Central Registration Centre

Certificate of Incorporation

[Pursuant to sub-section (2) of section 7 and sub-section (1) of section 8 of the Companies Act, 2013 (18 of 2013) and rule 18 of the Companies (Incorporation) Rules, 2014]

I hereby certify that GREENERGY PURE ETHANOL PRIVATE LIMITED is incorporated on this First day of July Two thousand twenty-two under the Companies Act, 2013 (18 of 2013) and that the company is limited by shares.

The Corporate Identity Number of the company is U24200KA2022PTC163272.

The Permanent Account Number (PAN) of the company is **AAJCG8851F** *

The Tax Deduction and Collection Account Number (TAN) of the company is **BLRG29460E** *

Given under my hand at Manesar this First day of July Two thousand twenty-two .

Digital Signature Certificate
SHIVARAJ C RANJERI
ASST. REGISTRAR OF COMPANIES
For and on behalf of the Jurisdictional Registrar of Companies
Registrar of Companies
Central Registration Centre

Disclaimer: This certificate only evidences incorporation of the company on the basis of documents and declarations of the applicant(s). This certificate is neither a license nor permission to conduct business or solicit deposits or funds from public. Permission of sector regulator is necessary wherever required. Registration status and other details of the company can be verified on www.mca.gov.in

---

Mailing Address as per record available in Registrar of Companies office:

GREENERGY PURE ETHANOL PRIVATE LIMITED
No.324, 1st Floor, Golden Point 4,, Vasnat Nagar, Bengaluru, Bangalore,
Karnataka, India, 560051

* as issued by the Income Tax Department

For M/s.Greenergy Pure Ethanol Private Limited

Authorised Signatory

Manager/Authorized Signatory

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GREENERGY PURE ETHANOL PRIVATE LIMITED

Regd. Off: No.324, Golden Point 4, Off. Queens Road Cross, Vasant Nagar, Bengaluru 560052, KA, IN
Ph: 080- 49222222 II Email: cs@goldengrp.co.in II CIN: U24200KA2022PTC163272

CERTIFIED TRUE COPY OF THE RESOLUTION PASSED AT THE MEETING OF THE BOARD OF DIRECTORS OF GREENERGY PURE ETHANOL PRIVATE LIMITED HELD AT THE REGISTERED OFFICE OF THE COMPANY ON 5TH FEBRUARY 2024 AT 9.00 AM

SUB: AUTHORIZATION FOR PURCHASE OF LANDS IN THE NAME OF COMPANY

RESOLVED THAT pursuant to applicable provisions of Companies Act, 2013 and other applicable statutory rules and regulations and subject to approval of government authorities, the approval of the Board of Directors, be and is hereby accorded to the Company to purchase parcels of Lands as detailed below and indicated in the Site Plans in terms of agreements proposed to be entered into by the Company and for consideration as agreed between the parties to agreements.

1. Lands in Survey Nos. 63, 65/2, 65/3 presently comprised in New Survey Nos. 63/2, 65/2 & 65/3B of Kumaramangalam Village, total extent of Acre 5.60 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.
2. Lands in Survey Nos. 68/1A, 70, 68/1B, presently comprised in New Survey Nos. 68/1A1, 70/1 & 68/1B1 of Kumaramangalam Village, total extent of Acre 3.77 Cents, Kullthalai Taluk, Karur, Tamil Nadu, India.
3. Lands in Survey No. 63 presently comprised in New Survey No. 63/1 of Kumaramangalam Village, total extent of Acre 2.00 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.
4. Lands in Survey Nos. 63, 65/1, 65/3 presently comprised in New Survey Nos. 63/1, 65/1 & 65/3A of Kumaramangalam Village, total extent of Acre 3.60 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.
5. Lands in Survey No. 67 of Kumaramangalam Village, total extent of Acre 0.98 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.
6. Lands in Survey Nos. 68/1A, 70 presently comprised in New Survey Nos. 68/1A2, 70/2 of Kumaramangalam Village, total extent of Acre 2.85 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.
7. Lands in Survey No. 68/1B of Kumaramangalam Village, total extent of Acre 0.90 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.
8. Lands in Survey Nos. 68/2, 69/2, 69/1, 72/2 of Kumaramangalam Village, total extent of Acre 2.35 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.

RESOLVED FURTHER THAT Mr.Thota Kiran Kumar, S/o. Mr. Naga Venkata Sai Siva Gangadhara Rao Thota, bearing PAN ASWPT6006F and Aadhar No 428581917541;Manager of the Company; be and is hereby authorized to communicate on behalf of the company with their Vendor, Government Officials and to represent the company before the concerned Sub Registrar Office, to sign the sale agreements and sale deeds on behalf of the company and to get register the Sale

For Greenergy Pure Ethanol Pvt Ltd

Authorised Signatory

Document No: 883 of Book 1 Sheet Contains 19 Sheets 16

Registering Officer

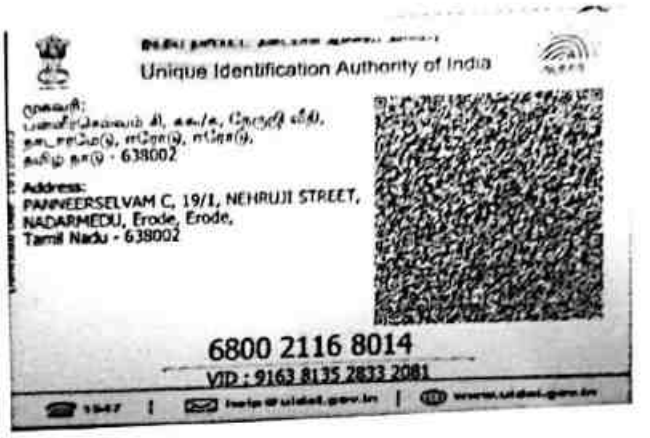
For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

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For M/s.Greenergy Pure Ethanol
Private Limited

Authorised

Manager/Authorized Signatory

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P5

13

தமிழ்நாடு அரசு
பதிவுத்துறை
முன்பதிவு செய்ததற்கான ஒப்புகைச்சீட்டு

முன்பதிவு விவரம்

பதிவு செய்த நாள்	26/02/2024
முன்பதிவு நாள்	27/02/2024
முன்பதிவு நேரம்	12:00 - 13:00
முன்பதிவு வரிசை எண்	1 [D301]
பதிவு வகை	ஆவணப் பதிவு
தற்காலிக எண்	TP/175200970/2024

விண்ணப்பதாரர் விவரம்

விண்ணப்பதாரர் பெயர்	திரு. தோட்டா கிரண் குமார்
தந்தை / கணவர் பெயர்	திரு. நாக வெங்கட சிவ சாய் கங்காதர ராவ்
சார்பதிவாளர் அலுவலகம்	குளித்தலை
சொத்து அமைந்துள்ள கிராமம்	குமாரமங்கலம்

குறிப்பு:

1. முன்பதிவு செய்த நபர் அவருக்காக ஒதுக்கப்பட்ட நேரத்திற்கு தவறாமல் அலுவலகத்திற்கு வந்து ஆவணத்தை பதிவுக்கு தாக்கல் செய்ய கோரப்படுகிறார்.
2. முன்பதிவு செய்த நபர் குறித்த நேரத்தில் வரவில்லையெனில் அடுத்த முன்பதிவு செய்த நபரின் ஆவணம் பதிவுக்கு எடுத்துக்கொள்ளப்படும். தவறவிட்டவரின் முன்பதிவு அடுத்த முன்பதிவு நேரத்தில் கடைசியாக வைக்கப்படும்.
3. முன்பதிவு நேரத்தில் ஒதுக்கப்பட்ட அனைத்து வரிசை எண்களுக்கான பதிவு மேற்கொண்ட பின்பே அடுத்த முன்பதிவு நேரத்தின் வரிசை எண்களுக்கான பதிவு தொடங்கும்.
4. **ஆவணப்பதிவிற்கான அனைத்து ஆதாரங்களும் தாக்கல் செய்யப்படும் நிலையில் ஆவணம் பதிவு செய்யப்படும். ஆவணப்பதிவிற்கு தேவையான ஆதாரங்கள் ஏதும் இல்லாத நிலை மற்றும் பதிவுக்கு ஏதும் தடையிருப்பின் பதிவு மறுப்புச் சீட்டு உருவாக்கப்பட்டு சார்பதிவாளரால் கையொப்பமிடப்பட்டு வழங்கப்படும்.**
5. **பதிவு செய்யப்பட்ட ஆவணம், தாக்கல் செய்தவருக்கு திரும்ப வழங்கப்படும். தாக்கல் செய்தவர் வர இயலாத நிலையில் ஆவணப்பதிவின் போதே வேறொரு நபரை ஆவணம் திரும்ப பெற நியமிக்கலாம். ஆவணப்பதிவின் போது நியமனம் செய்யப்பட்டவரின் விரல் ரேகை கவரப்படும். ஆவணம் திரும்ப அளிக்கும் போது அவரின் விரல் ரேகை மீண்டும் கவரப்பட்டு ஒப்பிட்டு சரிபார்த்தபின்பே ஆவணம் திரும்ப வழங்கப்படும்.**

ஏதேனும் சந்தேகங்கள்/குறைகள் இருப்பின் கீழ்க்கண்ட வழிமுறைகளில் தெரிவிக்கலாம்	
கட்டணமில்லா தொலைபேசி எண்	1800 102 5174
மாற்று மின்னஞ்சல் முகவரி	helpdesk@tnreginet.net

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பதிவுத்துறை

இரசீது - ஆவணப்பதிவு

இரசீது எண் : 1323/2024

ஆவண எண் : R/ Kulithalai/ புத்தகம்-1/ 833 / 2024

திரு தோட்டா கிரண் குமார் அவர்களிடமிருந்து ₹ 3,85,760 (ரூபாய் மூன்று இலட்சத்து என்பத்தைந்தாயிரத்து எழுநூற்று அறுபது மட்டும்) இணைய வழி REG20240223051902 7 385560.குறு பணப்பரிவர்த்தனை இயந்திரம் 405816574373 ₹ 200| கீழ்க்கண்ட விவரப்படி பெற்றுக் கொள்ளப்பட்டது.

வ எண்	விவரம்	தொகை (₹)
1	முத்திரைத்தீர்வை (முத்திரைச் சட்டம் பிரிவு 41ன் படி)	2,99,250
2	பதிவுக் கட்டணம்	85,500
3	கணினிக் கட்டணம்	900
4	குறுந்தகடுக் கட்டணம்	100
5	ஆவண எழுத்தர் நலநிதி	10
	செலுத்தப்பட்ட மொத்தத் தொகை	3,85,760

குறிப்பு: இந்த அசல் ஆவணம் உடனடியாக பக்க சான்று இடப்பட்டு ஒளி வருடல் செய்யப்பட்டு திரும்ப வழங்கப்படும். ஆகவே அசல் ஆவணத்தைத் திரும்பப் பெற தகுதி பெற்ற திரு / திருமதி /செல்வி திரு JEELAN BASHA இது தொடர்பாக குறுஞ்செய்தி பெற்றவுடன் அசல் ரசீதை அளித்து அசல் ஆவணத்தை திரும்ப பெற்றுக்கொள்ளலாம். இதில் ஏதேனும் இடர்பாடுகள் இருப்பின் கட்டணமில்லா தொலைபேசி எண் 1800-102-5174 - ஐ தொடர்பு கொள்ளவும்.

குளித்தலை அலுவலகம்

நாள்: 27/02/2024

பதிவு அலுவலர் கையொப்பம்

உருவாக்கப்பட்ட ஆவண/ வரைவு ஆவணச் சுருக்க விவரங்கள்			
பயனர் பெயர்	முழுப் பெயர்	கைப்பேசி எண்	உருவாக்கப்பட்ட நாள்
arumugabalaa (குடிமக்கள்)	KARPAGA VINAYAGAR	8825553322	23-02-24 07:05:14 PM

1. அசல் ஆவணத்தைத் திரும்பப் பெரும்போது உரிய நபரின் விரல் ரேகை பெறப்படுகிறதா என உறுதிசெய்து கொள்ளவும்.
2. ஆவணதாரர்கள் தங்களின் சரியான கைபேசி எண்ணைப் பதிவுக்கு தாக்கலாகும் ஆவணத்தில் தெரிவித்தால் ஆவணம்/சொத்தின் நிலை குறித்த குறுஞ்செய்தியை பெறலாம்.
3. ஆவணத்தை குறித்த காலத்தில் திரும்பப் பெற்றுக்கொள்ளத் தவறும் பட்சத்தில் பாதுகாப்பு கட்டணம் வசூலிக்கப்படும்.
4. பட்டா மாற்றம் தேவைப்படும் ஆவணங்களுக்கு பட்டா மாற்றம் செய்யக் கோரும் படிவம் இவ்வலுவலகத்தில் இருந்து இணையதளம் வழியாகவே வருவாய்த்துறைக்கு அனுப்பப்பட்டுள்ளது. அதன் ஒப்புகைச் சீட்டை தங்களின் அசல் ஆவணத்தைத் திரும்பப் பெறும்போது கேட்டுப் பெற்றுக்கொள்ளவும்.

https://tnreginet.gov.in என்ற இணைய தளம் மூலம் வழங்கப்படும் சேவைகள்

- கட்டணமின்றி வில்லங்க விவரம் தரவிறக்கம் செய்யும் வசதி
- சார் பதிவாளர் அலுவலகம் நேரில் வராமல் இணையதளம் மூலம் சான்றிட்ட நகல்கள், வில்லங்க சான்று விபரங்கள் விண்ணப்பித்து மின்னஞ்சல் மூலம் சான்று பெரும் வசதி
- இணையதளம் மூலம் பொது மக்களே ஆவணம் உருவாக்கும் வசதி
- இணையதளம் மூலம் வழிகாட்டி மதிப்பை அறியும் வசதி, கட்டிட மதிப்பை கணக்கிடும் வசதி
- இணையதளம் மூலம் முத்திரைத் தீர்வை, பதிவுக் கட்டணம் உள்ளிட்ட கட்டணங்கள் செலுத்தும் வசதி

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பத்திர பதிவின் தொடர்ச்சியாக பட்டா மாறுதல் செய்யும் பொருட்டு பதிவு விவரங்கள் வட்டாட்சியர் அலுவலகத்திற்கு அனுப்பப்பட்டமைக்கான ஒப்புகைச்சீட்டு

ஒப்புகைச்சிட்டு எண்: TNIGRS/2024/Rural/32959529/27022024185513

ஆவண பதிவு எண்	R/Kulithalai/புத்தகம் 1/833/2024	R/371/1/833/2024

கரூர் மாவட்டம், கரூர் பதிவு மாவட்டம், குளித்தலை வட்டம், குளித்தலை சார்பதிவாளர் அலுவலகம் குமாரமங்கலம் கிராமம், புல எண் / உட்பிரிவு 68/1A2,70/2-க்கு பட்டா மாறுதல் பெறுவதற்காக என்ற முகவரியில் வசிக்கும் - என்பவரால் குளித்தலை சார்பதிவாளர் அலுவலகத்தில் R/Kulithalai/புத்தகம் 1/833/2024 (பதிவு எண்) ன்படி மேற்கொள்ளப்பட்ட பதிவின் தொடர்ச்சியாக பட்டா மாறுதல் நடவடிக்கையின் பொருட்டு பதிவு விவரங்கள் குளித்தலை வட்டாட்சியர் அலுவலக குமாரமங்கலம் கிராமம் தொடர்பான குறுவட்ட அளவர் / கிராம நிர்வாக அலுவலருக்கு இணையம் வழியே 27/02/2024 அன்று விண்ணப்ப எண் 2024/0103/14/300382 ன் படி அனுப்பி வைக்கப்பட்டுள்ளது புல ஆய்வு தொடர்பாக சம்மந்தப்பட்ட குறுவட்ட அளவர் அல்லது கிராம நிர்வாக அலுவலரிடமிருந்து தங்களது கைப்பேசிக்கு குறுஞ்செய்தி அனுப்பப்படும் எனவும், பட்டா மாறுதலுக்கு தனியே விண்ணப்பிக்க வேண்டிய அவசியம் இல்லை என இதன்மூலம் தெரிவிக்கப்படுகிறது.

சார்பதிவாளர்
குளித்தலை

நாள்: 27/02/2024

- மனுவின் தொடர் நடவடிக்கையின் நிலையை http://www.eservices.tn.gov.in என்ற இணையவழிச் சேவையில் உள்ள 'Know your Application Status' ல் பார்வையிடலாம்.
- மேலும், அ-பதிவேடு, சிட்டா, புலப்பட நகல் மற்றும் TSLR ஆகியவற்றை பார்வையிட்டு பதிவிறக்கம் செய்து கொள்ளலாம்.
- இது தொடர்பான புகார் ஏதும் இருப்பின் 1800 425 1333 - எனும் கட்டணமில்லா தொலைபேசி எண்ணை தொடர்பு கொள்ளலாம்.

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834/2024

भारतीय गैर न्यायिक

एक सौ रुपये

Rs. 100

रु. 100

ONE HUNDRED RUPEES

सत्यमेव जयते

भारत INDIA

INDIA NON JUDICIAL

தமிழ்நாடு तमिलनाडु TAMILNADU 16 FEB 2024

DW 568448

M/s. Greenergy Pure Ethanol Pvt. Ltd., Bangalore.

அ. அப்துல் ரஹ்.
... ஆகாத முத்திரை தீர்வு மற்றும் ... நீதி மன்ற வளாகம் ... 2/2006, திருச்சி ... 93451 61811

SALE DEED

This Deed of Absolute Sale made and executed at Kulithalai on this 26th day of February, 2024.

Mr. Panneer Selvam, S/o. Chinnappa Gounder, residing at No.333, Thirumurugan Nagar, Pettávaithalai, Srirengam Taluk, Trichirapalli District. Tamil Nadu **(Aadhaar No.2618 2306 7865 & Pan No.AHMPP3008J)** herein after called the 'VENDOR'.

PURCHASER

VENDOR

For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

Document No. 834 of 2024 of Book 1 Contains 17 Sheets 1 Sheet

Registering Officer

To and In-Favor of **M/s.GREENERGY PURE ETHANOL PRIVATE LIMITED, (PAN - AAJCG8851F)** registered under the Companies Act vide CIN - U24200KA2022PTC163272, having Office at No.324, 1st Floor, Golden Point, 4, Vasant Nagar, Bangalore - 560051, State of Karnataka, represented by its Manager/Authorized Signatory, **Mr. Thota Kiran Kumar,** S/o. Naga Venkata Siva Sai Gangathara Rao, (Id Aadhar No.4285 8191 7541) authorized under Board Resolution dated 05.02.2024 by M/s. Greenergy Pure Ethanol Private Limited, herein after called the' PURCHASER'

The terms VENDOR and PURCHASER, wherever it may occur shall mean and include themselves, their heirs, legal representatives, executors, administrators and assigns.

This Deed of Sale Witnesseth as follows

Whereas the VENDOR is the sole, legal, true absolute and exclusive Owner of the property viz., **Land in Survey No.68/1B and presently comprised in New Survey No.68/1B2 of Kumaramangalam Village Total Extent of Acre 0.90 Cents** which is more fully and particularly described in the schedule hereunder, which he has purchased from and out of his own funds and his name from Mrs.Sornavadivi on 19.04.2004 under a Registered Sale Deed bearing **Document No.573/2004** in Book 1 on the file of the Sub Registrar Office, Kulithalai, Karur District.

Ever since the VENDOR has been in continuous, uninterrupted peaceful possession and enjoyment of the said property, with full powers of alienation, without any let or hindrances, paying all taxes and outgoing payable to the Government and Local Authorities and has got valid and marketable title to the said property.

And Whereas the VENDOR has offered to sell the Schedule mentioned property and the Purchaser has also accepted to buy the Schedule mentioned property

VENDOR

PURCHASER

For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

Document No. 834 of 2024 of Book 1 Contains 17 Sheets 2 Sheet

Registering Officer

Registering Officer

For a net Sale Consideration of Rs.13,50,000/- (Rupees Thirteen Lakhs Fifty Thousand Only), free from all encumbrances, for which sum the VENDOR has also agreed to convey the Sale of Schedule mentioned Property, unto the Purchaser free from all encumbrances.

Whereas after deducting the TDS of 1% i.e., Rs.13,500/- from the above said amount, the VENDOR has received the entire Sale Consideration of the sum of Rs.13,36,500/- (Rupees Thirteen Lakhs Thirty Six Thousand and Five Hundred Only) from the Purchaser with full satisfaction by way of Demand Draft drawn on Union Bank of India, Bangalore Cantonment Branch, Bangalore vide D.D.No.836096 dated 26.02.2024.

NOW THIS DEED OF ABSOLUTE SALE WITNESSETH AS FOLLOWS:-

In pursuance of the above said mutually agreed terms and in consideration of the above said sum of Rs.13,36,500/- (Rupees Thirteen Lakhs Thirty Six Thousand and Five Hundred Only) already paid by the PURCHASER to the VENDOR as stated above, the VENDOR doth hereby sell, convey, grant, transfer and assign, by way of absolute sale to and in favor of the Purchaser herein the Sale Property which is more fully and particularly described in the schedule hereunder, together with all ways, waters, water courses, ditches easements, advantages, liberties, rights and privileges, and all other appurtenances whatsoever appertaining thereto, to have and to hold the same as absolute owner with all powers of alienation,

THE VENDOR DOTH HEREBY FURTHER COVENANT WITH THE PURCHASER AS FOLLOWS:-

I) The VENDOR is the sole and absolute OWNER of the property hereby conveyed and that he has perfect right, title and interest to convey the said property to the Purchaser in the manner aforesaid and no other person has got any right, title and interest to convey the said property to the Purchaser in the manner aforesaid.

VENDOR

PURCHASER

For M/s.Greenergy Pure Ethanol Private Limited

Authorised

Manager/Authorized Signatory

Document No. 834 of 2024 of Book 1

Contains 17 Sheets 3 Sheet

Registering Officer

II) The VENDOR doth hereby declare that hereafter the VENDOR nor his heirs has got any manner of Right, Title or Interest over the property hereby sold. Even if anybody claims any such right, such claim shall be null and void.

III) The VENDOR doth hereby declare that there are no encumbrance, lien, trust, attachment, claim, charge, whatsoever which is subsisting on the said property and that the said property is not the subject matter of any litigation or proceedings and is not charged in favour of any Court, Revenue or other authority. If, However, there happen to be any encumbrances or litigation over the property and are disclosed at a later date, the VENDOR undertakes to clear them at his own cost and own motion and also shall compensate the Purchaser if any losses or expenses if any, the Purchaser may be put to, owing to the existence of such encumbrances and defects binding the VENDOR's other properties movable and immovable and also binding himself personally.

IV) The VENDOR doth hereby covenant with the Purchaser that the Purchaser shall and may at all times hereafter quietly and peacefully possess and enjoy the said property without any let or interruption or disturbances by the VENDOR or by any one claiming through him.

V) The VENDOR doth hereby covenant with the Purchaser that he and all persons lawfully and equitably claiming title will from time to time and at all times hereafter at the cost of the Purchaser execute and register all such acts, deeds and things for further and more perfectly assuring the title of the Purchaser in respect of the property hereby conveyed.

VI) The VENDOR doth hereby covenant with the Purchaser that he shall sign and execute any rectification at the expenses of purchaser that may be necessary in order to make this sale absolute.

VII) The VENDOR doth hereby covenant with the Purchaser that he has, this day handed over to the Purchaser all documents and records pertaining to the title of the schedule mentioned property.

PURCHASER

For M/s.Greenergy Pure Ethanol Private Limited

Authorised

Manager/Authorized Signatory

Document No. 834 of 2024 of Book 1 Contains 17 Sheets 4 Sheet

Registering Officer

VENDOR

VIII) The VENDOR doth hereby declare that all taxes and other public charges payable in respect of the schedule mentioned property hereby conveyed has been paid up to this date and further covenant with the Purchaser that there are no arrears of tax payable to Government or local body.

IX) The VENDOR doth hereby declare and assure the Purchaser that he shall indemnify and shall keep indemnified the Purchaser against any loss or damage that the Purchaser may be put to by reason of any kind of encumbrance over the property.

X) The VENDOR hereby expressly declares that the sale of property mentioned in the schedule hereunder is not in violation of any law.

XI) The VENDOR doth hereby covenant with the Purchaser that he shall sign and execute any rectification at the expenses of purchaser that may be necessary in order to make this sale absolute.

XII) The VENDOR doth hereby covenant with the Purchaser that he shall also sign and execute any letter or form that may be required for the mutation of name in the revenue records and transfer of Patta in favour of the Purchaser or for such other purposes.

To this effect, the VENDOR has executed this Deed of Absolute Sale on the day, month and year first above mentioned in the presence of following witnesses.

SCHEDULE OF PROPERTY

Karur District, Karur Registration District, Kulithalai Sub-Registration District, Kulithalai Taluk, Within limits of Kumaramangalam Village, in Ayan Nanja Survey No.68/1B in Land measuring **Acre 0.90 Cents** which is eastern side half share out of Acre 1.80 Cents (equal to Hectare 0.72.5)

PURCHASER

For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

Document No. 834 of 2024 of Book 1 Contains 17 Sheets 5 Sheet

Registering Officer

VENDOR

North by	:	Lands Purchased by Panneer Selvam from Arunachalam
East by	:	Lands purchased by Lakshmanan and Paneer Selvam
South by	:	Lands Purchase by Panneer Selvam from Subbu Lakshmi
West by	:	Lands purchased by Lakshmanan

Within this Four boundaries, Total Extent of **Acre 0.90 Cents** together with the pathway, easement, canal and irrigation rights etc.,

The Property lies within the limits of Kulithalai Taluk and presently comprised in Survey No.68/1B2 of Kumaramangalam Village vide Patta No.1.

The Present market value of the Property is Rs.13,50,000/-.

PURCHASER
For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

VENDOR

Witnesses:

1. **(Ganesh)**, S/o. Panneer Selvam,
Door No.19/1, Nehruji Street, Nadar Medu, Erode Taluk & District – 638002.
(Aadhar No.6800 2116 8014)

2. **(Jeelan Basha),** S/o. Shaik Mahamood,
Door No.3/501-C-2, Anbu Nagar, Avalappalli Road, Hosur - 635109, Krishnagiri Dt. (Aadhar No.5189 1339 3001)



Drafted by:-
J.KAJA MOIDEEN,B.A.,M.L.,
Advocate, (Roll No.Ms3654/2010)
#71, 1st Floor, EVR Road,
Puthur, Trichy-620017.
Cell No. 99408-71076.

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Registering Officer

The Statement Under Rule 3 (1) of Tamil Nadu Stamp (Prevention of Undervaluation of Instruments) Rules 1968

District:- Karur

Kulithalai S.R.O

Taluk :- Kulithalai

Village:- Kumaramangalam

Serial No	Survey No	Extent Acre - Cents	Nature of Property	Market Value
1	68/1B2	0 . 90	Nanja	Rs.13,50,000/-
Total	**Acre 0 . 90 Cents**			**Rs.13,50,000/-**

DECLARATION

Affidavit that the Property is not situated in water body area.

(Declaration according to Judgment in W.P.(MD)No.22163/2018)

We certify that the property identified in this document is not comes under the category of water bodies, waterways or catchment areas.

We also understand that we may be subject to legal action if we are later found to have misrepresented or misrepresented them.

PURCHASER

For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

VENDOR

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Registering Officer

R/Kulithalai/Book-1/834/2024

CERTIFICATE UNDER SECTION 42 OF THE INDIAN STAMP ACT 1899

S.No 635 of 2024

I hereby certify that a sum of ₹ 94,400/- (Rupees Ninty Four Thousand Four Hundred only) on account of deficit stamp duty has been levied under section 41 of the Stamp Act in respect of this instrument from Mr. தோட்டா கிரண் குமார் residing at No.324, 1st Floor, Golden Point, 4, Vasant Nagar, Bangalore, Karnataka, India, 560051.

Sub Registrar Kulithalai
Date 27/02/2024

Signature of Sub Registrar and Collector under Section 41 of the Indian Stamp Act

Presented in the office of the Sub Registrar of Kulithalai and fee of ₹ 27,810/- paid at 05:03 PM on the 27/02/2024 by

Left Thumb





For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

Additions as per recitals of document

Execution admitted by

Left Thumb





Identity of the person verified through Consent based AADHAAR Authentication using Thumb Impression with UIDAI reference No. : UKC:310024fe15ef4f6f25431397d243189faca268 (Details from UIDAI : Panneerselvam C , 07-01-1960, xxxxxxxx7865)



Claim admitted by

Left Thumb





For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

Identity of the person verified through Consent based AADHAAR Authentication using Thumb Impression with UIDAI reference No. UKC:[illegible]01367ef1e1c4c4a3ea2047ded96b182c9 (Details from UIDAI : Thota Kiran Kumar S/O Naga Venkata Siva Sai Gangadhara Rao, 05-06-



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Registering Officer

	1992, xxxxxxxx7541)	

27th day of February 2024

krishnan marappan
Sub Registrar
Kulithalai

Registered as Number R/Kulithalai/Book-1/834/2024.

Date 27/02/2024
Kulithalai

krishnan marappan
Sub Registrar

32554774

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Registering Officer

தமிழ்நாடு அரசு

வருவாய்த் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

மாவட்டம் : கரூர் வட்டம் : குளித்தலை

வருவாய் கிராமம் : குமாரமங்கலம் பட்டா எண் : 1

உரிமையாளர்கள் பெயர்

1. சின்னப்பகவுண்டர் மகன் பன்னீர்செல்வம்

புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	
68	2	0 - 47.00	2.75	--	--	--	--	D1414/118---- -- 24-07-2004
69	2	0 - 33.00	2.87	--	--	--	--	D1414/118---- -- 24-07-2004
68	1A2	--	--	0 - 51.50	12.09	--	--	2019/0105/14/025276--2019/14/03/000021SD -- 20-08-2019
68	1B2	--	--	0 - 36.25	8.51	--	--	2019/0105/14/025274--2019/14/03/000019SD -- 20-08-2019
		0 - 80.00	5.62	0 - 87.75	20.60			

குறிப்பு2 :

1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் **https://eservices.tn.gov.in** என்ற இணைய தளத்தில் **14/03/001/00001/30141** என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 22-02-2024 அன்று 09:54:10 AM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின்2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

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Registering Officer


Government of India

பன்னீர்செல்வம் சி
Panneerselvam C
பிறந்த நாள்/DOB: 07/01/1960
ஆண்/ MALE

Issue Date: 19/09/2012

2618 2306 7865

VID : 9125 9945 9452 4471

எனது ஆதார், எனது அடையாளம்


Unique Identification Authority of India

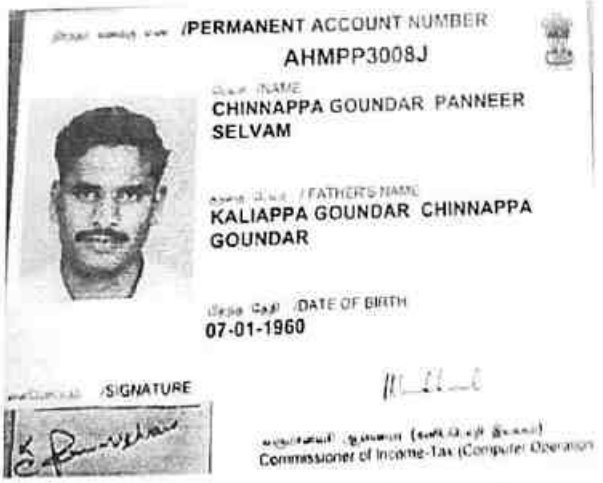
முகவரி:
த/ பெ சின்னப்ப கவுண்டர், எண் 333
திருமுருகன் நகர், பெட்டவாய்த்தலை,
திருச்சிராப்பள்ளி,
தமிழ் நாடு - 639112

Address:
S/O CHINNAPPA GOUNDER, NO 333
THIRUMURUGAN NAGAR, Pettavathalai,
Tiruchirappalli,
Tamil Nadu - 639112

2618 2306 7865

VID : 9125 9945 9452 4471

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/PERMANENT ACCOUNT NUMBER

AHMPP3008J

NAME
CHINNAPPA GOUNDAR PANNEER SELVAM

FATHER'S NAME
KALIAPPA GOUNDAR CHINNAPPA GOUNDAR

DATE OF BIRTH
07-01-1960

SIGNATURE

Commissioner of Income-Tax (Computer Operation)

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Registering Officer

भारत सरकार
Government of India

आधार

भारतीय विशिष्ट पहचान प्राधिकरण
Unique Identification Authority of India

Enrolment No.: 0647/02766/07908

To
Thota Kiran Kumar
S/O Naga Venkata Siva Sai Gangadhara Rao
1-188-28
siva ganga
siva ganga
Machilipatnam
Krishna Andhra Pradesh - 521001
9071357624

आपका आधार क्रमांक / Your Aadhaar No. :
4285 8191 7541
VID : 9166 9218 3186 3447
मेरा आधार, मेरी पहचान

Government of India

AADHAAR

सूचना

- आधार पहचान का प्रमाण है, नागरिकता का नहीं।
- सुरक्षित QR कोड / ऑफलाइन XML / ऑनलाइन ऑथेंटिकेशन से पहचान प्रमाणित करें।
- यह एक इलेक्ट्रॉनिक प्रक्रिया द्वारा बना हुआ पत्र है।

INFORMATION

- Aadhaar is a proof of identity, not of citizenship.
- Verify identity using Secure QR Code/ Offline XML/ Online Authentication.
- This is electronically generated letter.

- आधार देश भर में मान्य है।
- आधार कई सरकारी और गैर सरकारी सेवाओं को पाना आसान बनाता है।
- आधार में मोबाइल नंबर और ईमेल ID अपडेट रखें।
- आधार को अपने स्मार्ट फोन पर रखें, mAadhaar App के साथ।

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- Aadhaar helps you avail various Government and non-Government services easily.
- Keep your mobile number & email ID updated in Aadhaar.
- Carry Aadhaar in your smart phone – use mAadhaar App.

भारत सरकार
Government of India



Thota Kiran Kumar
Date of Birth/DOB: 05/06/1992
Male/ MALE

Issue Date: 11/12/2011

4285 8191 7541
VID : 9166 9218 3186 3447
मेरा आधार, मेरी पहचान

भारतीय विशिष्ट पहचान प्राधिकरण
Unique Identification Authority of India

Address:
S/O Naga Venkata Siva Sai Gangadhara Rao,
1-188-28, siva ganga, siva ganga,
Machilipatnam, Krishna,
Andhra Pradesh - 521001

Download Date: 31/01/2023

4285 8191 7541
VID : 9166 9218 3186 3447

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For M/s.Greenergy Pure Ethanol Private Limited

Authorised

Manager/Authorized Signatory

Document No. 834 of 2024 of Book 1
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Registering Officer

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सत्यमेव जयते

GOVERNMENT OF INDIA
MINISTRY OF CORPORATE AFFAIRS

Central Registration Centre

Certificate of Incorporation

[Pursuant to sub-section (2) of section 7 and sub-section (1) of section 8 of the Companies Act, 2013 (18 of 2013) and rule 18 of the Companies (Incorporation) Rules, 2014]

I hereby certify that GREENERGY PURE ETHANOL PRIVATE LIMITED is incorporated on this First day of July Two thousand twenty-two under the Companies Act, 2013 (18 of 2013) and that the company is limited by shares.

The Corporate Identity Number of the company is U24200KA2022PTC163272.

The Permanent Account Number (PAN) of the company is **AAJCG8851F** *

The Tax Deduction and Collection Account Number (TAN) of the company is **BLRG29460E** *

Given under my hand at Manesar this First day of July Two thousand twenty-two .

DS MINISTRY OF CORPORATE AFFAIRS I

Digital Signature Certificate
SHIVARAJ C RANJERI
ASST. REGISTRAR OF COMPANIES
For and on behalf of the Jurisdictional Registrar of Companies
Registrar of Companies
Central Registration Centre

Disclaimer: This certificate only evidences incorporation of the company on the basis of documents and declarations of the applicant(s). This certificate is neither a license nor permission to conduct business or solicit deposits or funds from public. Permission of sector regulator is necessary wherever required. Registration status and other details of the company can be verified on www.mca.gov.in

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Mailing Address as per record available in Registrar of Companies office:

GREENERGY PURE ETHANOL PRIVATE LIMITED
No.324, 1st Floor, Golden Point 4,, Vasnat Nagar, Bengaluru, Bangalore,
Karnataka, India, 560051

* as issued by the Income Tax Department

For M/s.Greenergy Pure Ethanol Private Limited

Authorised

Manager/Authorized Signatory

Document No. 834 of 2024 of Book 1 Contains 17 Sheets 13 Sheet

Registering Officer

GREENERGY PURE ETHANOL PRIVATE LIMITED

Regd. Off: No.324, Golden Point 4, Off. Queens Road Cross, Vasant Nagar, Bengaluru 560052, KA, IN

Ph: 080- 49222222 II Email: cs@goldengrp.co.in II CIN: U24200KA2022PTC163272

CERTIFIED TRUE COPY OF THE RESOLUTION PASSED AT THE MEETING OF THE BOARD OF DIRECTORS OF GREENERGY PURE ETHANOL PRIVATE LIMITED HELD AT THE REGISTERED OFFICE OF THE COMPANY ON 5TH FEBRUARY 2024 AT 9.00 AM

SUB: AUTHORIZATION FOR PURCHASE OF LANDS IN THE NAME OF COMPANY

RESOLVED THAT pursuant to applicable provisions of Companies Act, 2013 and other applicable statutory rules and regulations and subject to approval of government authorities, the approval of the Board of Directors, be and is hereby accorded to the Company to purchase parcels of Lands as detailed below and indicated in the Site Plans in terms of agreements proposed to be entered into by the Company and for consideration as agreed between the parties to agreements.

1. Lands in Survey Nos. 63, 65/2, 65/3 presently comprised in New Survey Nos. 63/2, 65/2 & 65/3B of Kumaramangalam Village, total extent of Acre 5.60 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.
2. Lands in Survey Nos. 68/1A, 70, 68/1B, presently comprised in New Survey Nos. 68/1A1, 70/1 & 68/1B1 of Kumaramangalam Village, total extent of Acre 3.77 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.
3. Lands in Survey No. 63 presently comprised in New Survey No. 63/1 of Kumaramangalam Village, total extent of Acre 2.00 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.
4. Lands in Survey Nos. 63, 65/1, 65/3 presently comprised in New Survey Nos. 63/1, 65/1 & 65/3A of Kumaramangalam Village, total extent of Acre 3.60 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.
5. Lands in Survey No. 67 of Kumaramangalam Village, total extent of Acre 0.98 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.
6. Lands in Survey Nos. 68/1A, 70 presently comprised in New Survey Nos. 68/1A2, 70/2 of Kumaramangalam Village, total extent of Acre 2.85 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.
7. Lands in Survey No. 68/1B of Kumaramangalam Village, total extent of Acre 0.90 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.
8. Lands in Survey Nos. 68/2, 69/2, 69/1, 72/2 of Kumaramangalam Village, total extent of Acre 2.35 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.

RESOLVED FURTHER THAT Mr.Thota Kiran Kumar, S/o. Mr. Naga Venkata Sai Siva Gangadhara Rao Thota, bearing PAN ASWPT6006F and Aadhar No 428581917541;Manager of the Company; be and is hereby authorized to communicate on behalf of the company with their Vendor, Government Officials and to represent the company before the concerned Sub Registrar Office, to sign the sale agreements and sale deeds on behalf of the company and to get register the Sale

For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

For Greenergy Pure Ethanol Pvt Ltd

Authorised Signatory

Document No. 834 of 2024 of Book 1

Contains 17 Sheets

Registering Officer

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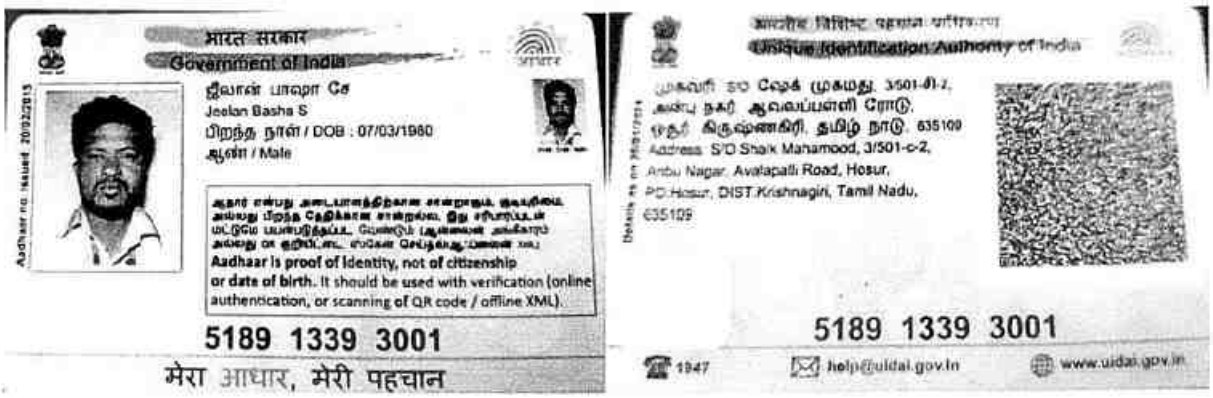




Ganesh.P

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Contains 17 Sheets 15 Sheet

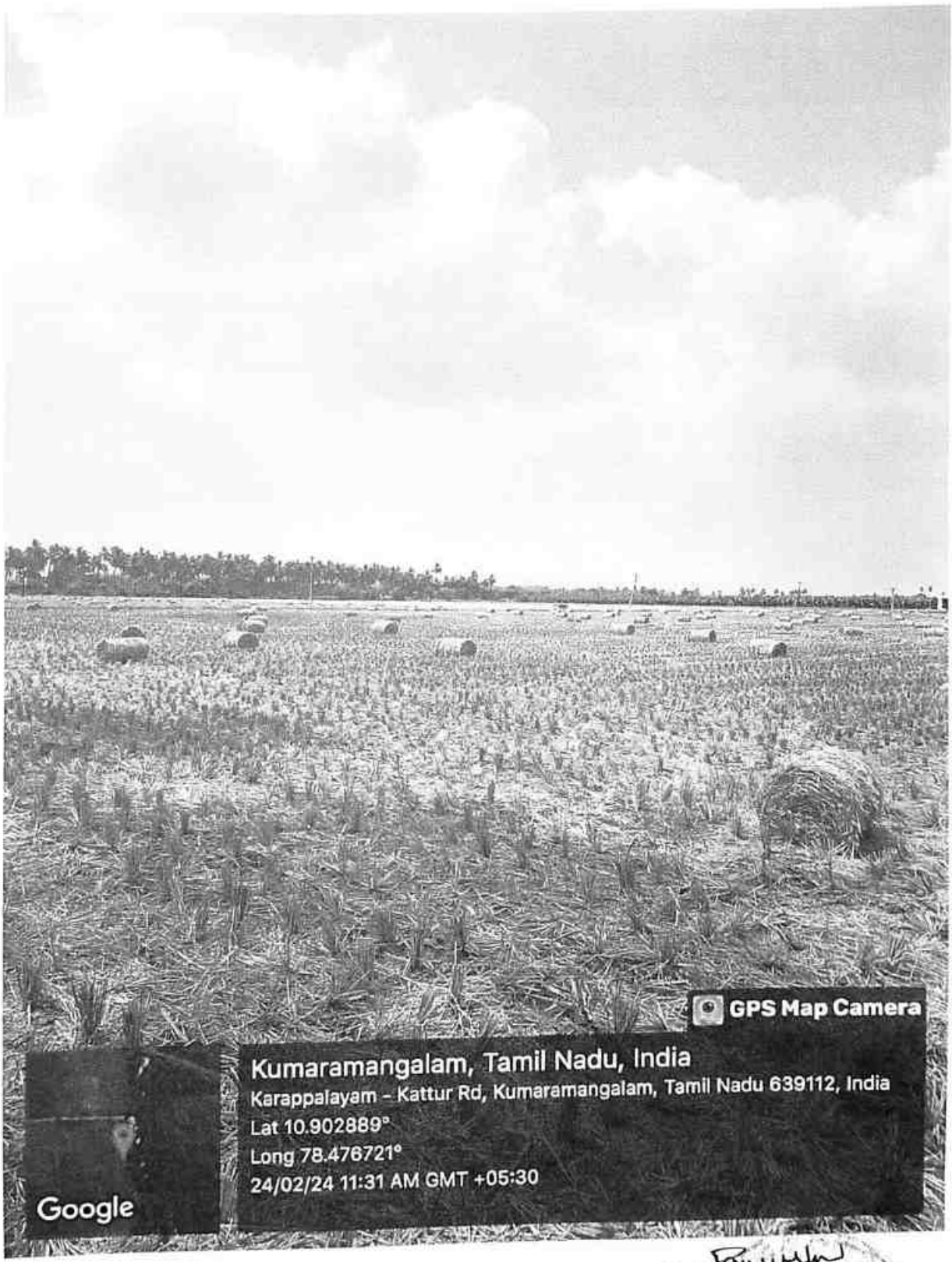
Registering Officer



S. Jeelan

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Registering Officer



For M/s.Greenergy Pure ~~Ethanol~~
Private Limited

Authorised

Manager/Authorized Signatory

Document No. 834 of 2024 of Book 1
Contains 17 Sheets 17 Sheet

Registering Officer

பதிவுத்துறை

இரசீது - ஆவணப்பதிவு

இரசீது எண் : 1325/2024

ஆவண எண் : R/ Kulithalai/ புத்தகம்-1/ 834 / 2024

திரு தோட்டா கிரண் குமார் அவர்களிடமிருந்து ₹ 1,22,210 (ரூபாய் ஒரு இலட்சத்து இருபத்திரண்டாயிரத்து இருநூற்று பத்து மட்டும்) (இணைய வழி REG20240223051886? ₹ 122210) கீழ்க்கண்ட விவரப்படி பெற்றுக் கொள்ளப்பட்டது.

வ.எண்	விவரம்	தொகை (₹)
1	முத்திரைத்தீர்வை (முத்திரைச் சட்டம் பிரிவு 41ன் படி)	94,400
2	பதிவுக் கட்டணம்	27,000
3	கணினிக் கட்டணம்	700
4	குறுந்தகடுக் கட்டணம்	100
5	ஆவண எழுத்தர் நலநிதி	10
	செலுத்தப்பட்ட மொத்தத் தொகை	1,22,210

குறிப்பு: இந்த அசல் ஆவணம் உடனடியாக பக்க சான்று இடப்பட்டு ஒளி வருடல் செய்யப்பட்டு திரும்ப வழங்கப்படும். ஆகவே அசல் ஆவணத்தைத் திரும்பப் பெற தகுதி பெற்ற திரு / திருமதி /செல்வி திரு JEELAN BASHA இது தொடர்பாக குறுஞ்செய்தி பெற்றவுடன் அசல் ரசீதை அளித்து அசல் ஆவணத்தை திரும்ப பெற்றுக்கொள்ளலாம். இதில் ஏதேனும் இடர்பாடுகள் இருப்பின் கட்டணமில்லா தொலைபேசி எண் 1800-102-5174 - ஐ தொடர்பு கொள்ளவும்.

குளித்தலை அலுவலகம்

பதிவு அலுவலர் கையொப்பம்

நாள்: 27/02/2024

உருவாக்கப்பட்ட ஆவண/ வரைவு ஆவணச் சுருக்க விவரங்கள்			
பயனர் பெயர்	முழுப் பெயர்	கைப்பேசி எண்	உருவாக்கப்பட்ட நாள்
arumugabalaa (குடிமக்கள்)	KARPAGA VINAYAGAR	8825553322	23-02-24 07:27:49 PM

1. அசல் ஆவணத்தைத் திரும்பப் பெரும்போது உரிய நபரின் விரல் ரேகை பெறப்படுகிறதா என உறுதிசெய்து கொள்ளவும்.
2. ஆவணதாரர்கள் தங்களின் சரியான கைபேசி எண்ணைப் பதிவுக்கு தாக்கலாகும் ஆவணத்தில் தெரிவித்தால் ஆவணம்/சொத்தின் நிலை குறித்த குறுஞ்செய்தியை பெறலாம்.
3. ஆவணத்தை குறித்த காலத்தில் திரும்பப் பெற்றுக்கொள்ளத் தவறும் பட்சத்தில் பாதுகாப்பு கட்டணம் வசூலிக்கப்படும்.
4. பட்டா மாற்றம் தேவைப்படும் ஆவணங்களுக்கு பட்டா மாற்றம் செய்யக் கோரும் படிவம் இவ்வலுவலகத்தில் இருந்து இணையதளம் வழியாகவே வருவாய்த்துறைக்கு அனுப்பப்பட்டுள்ளது. அதன் ஒப்புகைச் சீட்டை தங்களின் அசல் ஆவணத்தைத் திரும்பப் பெறும்போது கேட்டுப் பெற்றுக்கொள்ளவும்.

https://tnreginet.gov.in என்ற இணைய தளம் மூலம் வழங்கப்படும் சேவைகள்:

- கட்டணமின்றி வில்லங்க விவரம் தரவிறக்கம் செய்யும் வசதி
- சார் பதிவாளர் அலுவலகம் நேரில் வராமல் இணையதளம் மூலம் சான்றிட்ட நகல்கள், வில்லங்க சான்று விபரங்கள் விண்ணப்பித்து மின்னஞ்சல் மூலம் சான்று பெரும் வசதி
- இணையதளம் மூலம் பொது மக்களே ஆவணம் உருவாக்கும் வசதி
- இணையதளம் மூலம் வழிகாட்டி மதிப்பை அறியும் வசதி, கட்டிட மதிப்பை கணக்கிடும் வசதி
- இணையதளம் மூலம் முத்திரைத் தீர்வை, பதிவுக் கட்டணம் உள்ளிட்ட கட்டணங்கள் செலுத்தும் வசதி
- பொதுமக்கள் நலன் சார்ந்த சுற்றறிக்கைகள்/அரசாணைகள் பதிவுத்துறையின் இணையதளத்தில் பார்வையிடும் வசதி

தமிழ்நாடு அரசு
பதிவுத்துறை
முன்பதிவு செய்ததற்கான ஒப்புகைச்சீட்டு

முன்பதிவு விவரம்

பதிவு செய்த நாள்	26/02/2024
முன்பதிவு நாள்	27/02/2024
முன்பதிவு நேரம்	12:00 - 13:00
முன்பதிவு வரிசை எண்	2 [D302]
பதிவு வகை	ஆவணப் பதிவு
தற்காலிக எண்	TP/175201893/2024

விண்ணப்பதாரர் விவரம்

விண்ணப்பதாரர் பெயர்	திரு. தோட்டா கிரண் குமார்
தந்தை / கணவர் பெயர்	திரு. நாக வெங்கட சிவ சாய் கங்காதர ராவ்
சார்பதிவாளர் அலுவலகம்	குளித்தலை
சொத்து அமைந்துள்ள கிராமம்	குமாரமங்கலம்

குறிப்பு:

1. முன்பதிவு செய்த நபர் அவருக்காக ஒதுக்கப்பட்ட நேரத்திற்கு தவறாமல் அலுவலகத்திற்கு வந்து ஆவணத்தை பதிவுக்கு தாக்கல் செய்ய கோரப்படுகிறார்.
2. முன்பதிவு செய்த நபர் குறித்த நேரத்தில் வரவில்லையெனில் அடுத்த முன்பதிவு செய்த நபரின் ஆவணம் பதிவுக்கு எடுத்துக்கொள்ளப்படும். தவறவிட்டவரின் முன்பதிவு அடுத்த முன்பதிவு நேரத்தில் கடைசியாக வைக்கப்படும்.
3. முன்பதிவு நேரத்தில் ஒதுக்கப்பட்ட அனைத்து வரிசை எண்களுக்கான பதிவு மேற்கொண்ட பின்பே அடுத்த முன்பதிவு நேரத்தின் வரிசை எண்களுக்கான பதிவு தொடங்கும்.
4. ஆவணப்பதிவிற்கான அனைத்து ஆதாரங்களும் தாக்கல் செய்யப்படும் நிலையில் ஆவணம் பதிவு செய்யப்படும். ஆவணப்பதிவிற்கு தேவையான ஆதாரங்கள் ஏதும் இல்லாத நிலை மற்றும் பதிவுக்கு ஏதும் தடையிருப்பின் பதிவு மறுப்புச் சீட்டு உருவாக்கப்பட்டு சார்பதிவாளரால் கையொப்பமிடப்பட்டு வழங்கப்படும்.
5. பதிவு செய்யப்பட்ட ஆவணம், தாக்கல் செய்தவருக்கு திரும்ப வழங்கப்படும். தாக்கல் செய்தவர் வர இயலாத நிலையில் ஆவணப்பதிவின் போதே வேறொரு நபரை ஆவணம் திரும்ப பெற நியமிக்கலாம். ஆவணப்பதிவின் போது நியமனம் செய்யப்பட்டவரின் விரல் ரேகை கவரப்படும். ஆவணம் திரும்ப அளிக்கும் போது அவரின் விரல் ரேகை மீண்டும் கவரப்பட்டு ஒப்பிட்டு சரிபார்த்தபின்பே ஆவணம் திரும்ப வழங்கப்படும்.

ஏதேனும் சந்தேகங்கள்/குறைகள் இருப்பின் கீழ்க்கண்ட வழிமுறைகளில் தெரிவிக்கலாம்	
கட்டணமில்லா தொலைபேசி எண்	1800 102 5174
மாற்று மின்னஞ்சல் முகவரி	helpdesk@tnreginet.net

பத்திர பதிவின் தொடர்ச்சியாக பட்டா மாறுதல் செய்யும் பொருட்டு பதிவு விவரங்கள் வட்டாட்சியர் அலுவலகத்திற்கு அனுப்பப்பட்டமைக்கான ஒப்புகைச்சீட்டு

ஒப்புகைச்சீட்டு எண்: TNIGRS/2024/Rural/32959342/27022024190121

ஆவண பதிவு எண்	R/Kulithalai/புத்தகம் 1/834/2024	R/371/1/834/2024

கரூர் மாவட்டம், கரூர் பதிவு மாவட்டம், குளித்தலை வட்டம், குளித்தலை சார்பதிவாளர் அலுவலகம் குமாரமங்கலம் கிராமம், புல எண் / உட்பிரிவு 68/1B2-க்கு பட்டா மாறுதல் பெறுவதற்காக என்ற முகவரியில் வசிக்கும் - என்பவரால் குளித்தலை சார்பதிவாளர் அலுவலகத்தில் R/Kulithalai/புத்தகம் 1/834/2024 (பதிவு எண்) ன்படி மேற்கொள்ளப்பட்ட பதிவின் தொடர்ச்சியாக பட்டா மாறுதல் நடவடிக்கையின் பொருட்டு பதிவு விவரங்கள் குளித்தலை வட்டாட்சியர் அலுவலக குமாரமங்கலம் கிராமம் தொடர்பான குறுவட்ட அளவர் / கிராம நிர்வாக அலுவலருக்கு இணையம் வழியே 27/02/2024 அன்று விண்ணப்ப எண் 2024/0103/14/300385 ன் படி அனுப்பி வைக்கப்பட்டுள்ளது. புல ஆய்வு தொடர்பாக சம்மந்தப்பட்ட குறுவட்ட அளவர் அல்லது கிராம நிர்வாக அலுவலரிடமிருந்து தங்களது கைப்பேசிக்கு குறுஞ்செய்தி அனுப்பப்படும் எனவும், பட்டா மாறுதலுக்கு தனியே விண்ணப்பிக்க வேண்டிய அவசியம் இல்லை என இதன்மூலம் தெரிவிக்கப்படுகிறது.

சார்பதிவாளர்
குளித்தலை

நாள்: 27/02/2024

- மனுவின் தொடர் நடவடிக்கையின் நிலையை http://www.eservices.tn.gov.in என்ற இணையவழிச் சேவையில் உள்ள 'Know your Application Status' ல் பார்வையிடலாம்.
- மேலும், அ-பதிவேடு, சிட்டா, புலப்பட நகல் மற்றும் TSLR ஆகியவற்றை பார்வையிட்டு பதிவிறக்கம் செய்து கொள்ளலாம்.
- இது தொடர்பான புகார் ஏதும் இருப்பின் 1800 425 1333 - எனும் கட்டணமில்லா தொலைபேசி எண்ணை தொடர்பு கொள்ளலாம்.

835/2024

भारतीय गैर न्यायिक

एक सौ रुपये Rs. 100

रु. 100 ONE HUNDRED RUPEES

सत्यमेव जयते

भारत INDIA

INDIA NON JUDICIAL

தமிழ்நாடு तमिलनाडु TAMILNADU 16 FEB 2024 DW 568447

M/s. Greenergy Pure Ethanol Pvt. Ltd
Bangalore.

அ. ஹம்ஜாத், பி.எ
தொழிலாளர் நீதி மன்றம்
மாவட்ட நீதி மன்ற வளாக
எண்: 2/2000, திருச்சி
செல் எண்: 93451 61811

SALE DEED

This Deed of Absolute Sale made and executed at Kulithalai on this 26th day of February, 2024.

Mr. Panneer Selvam, S/o.Chinnappa Gounder, residing at No.333, Thirumurugan Nagar, Pettavaithalai, Srirengam Taluk, Trichirapalli District. Tamil Nadu **(Aadhaar No.2618 2306 7865 & Pan No.AHMPP3008J)** herein after called the 'VENDOR'.

VENDOR

PURCHASER
For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

Document No. 835 of 2024 of Book 1 Contains 17 Sheets 1 Sheet

Registering Officer

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To and In-Favor of **M/s.GREENERGY PURE ETHANOL PRIVATE LIMITED, (PAN - AAJCG8851F)** registered under the Companies Act vide CIN - U24200KA2022PTC163272, having Office at No.324, 1st Floor, Golden Point, 4, Vasant Nagar, Bangalore - 560051, State of Karnataka, represented by its Manager/Authorized Signatory, **Mr. Thota Kiran Kumar,** S/o. Naga Venkata Siva Sai Gangathara Rao, (Id Aadhar No.4285 8191 7541) authorized under Board Resolution dated 05.02.2024 by M/s. Greenergy Pure Ethanol Private Limited, herein after called the' PURCHASER'

The terms VENDOR and PURCHASER, wherever it may occur shall mean and include themselves, their heirs, legal representatives, executors, administrators and assigns.

This Deed of Sale Witnesseth as follows

Whereas the VENDOR is the sole, legal, true absolute and exclusive Owner of the property viz., **Land in Survey No.67 of Kumaramangalam Village Total Extent of Acre 0.98 Cents** which is more fully and particularly described in the schedule hereunder, which he has purchased from and out of his own funds and his name from Mr.Arun Raja on 11.10.2023 under Registered Sale Deed bearing **Document No.4181/2023** in Book 1 on the file of the Sub Registrar Office, Kulithalai, Karur District.

Ever since the VENDOR has been in continuous, uninterrupted peaceful possession and enjoyment of the said property, with full powers of alienation, without any let or hindrances, paying all taxes and outgoing payable to the Government and Local Authorities and has got valid and marketable title to the said property.

And Whereas the VENDOR has offered to sell the Schedule mentioned property and the Purchaser has also accepted to buy the Schedule mentioned property

PURCHASER
For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

VENDOR

Document No. 835 of 2024 of Book
Contains 17 Sheets 2 Sheet

Registering Officer

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For a net Sale Consideration of Rs.14,70,000/- (Rupees Fourteen Lakhs Seventy Thousand Only), free from all encumbrances, for which sum the VENDOR has also agreed to convey the Sale of Schedule mentioned Property, unto the Purchaser free from all encumbrances.

Whereas after deducting the TDS of 1% i.e., Rs.14,700/- from the above said amount, the VENDOR has received the entire Sale Consideration of the sum of Rs.14,55,300/- (Rupees Fourteen Lakhs Fifty Five Thousand and Three Hundred Only) from the Purchaser with full satisfaction by way of Demand Draft drawn on Union Bank of India, Bangalore Cantonment Branch, Bangalore vide D.D.No.836097 dated 26.02.2024.

NOW THIS DEED OF ABSOLUTE SALE WITNESSETH AS FOLLOWS:-

In pursuance of the above said mutually agreed terms and in consideration of the above said sum of RS.14,55,300/- (Rupees Fourteen Lakhs Fifty Five Thousand and Three Hundred Only) already paid by the PURCHASER to the VENDOR as stated above, the VENDOR doth hereby sell, convey, grant, transfer and assign, by way of absolute sale to and in favor of the Purchaser herein the Sale Property which is more fully and particularly described in the schedule hereunder, together with all ways, waters, water courses, ditches easements, advantages, liberties, rights and privileges, and all other appurtenances whatsoever appertaining thereto, to have and to hold the same as absolute owner with all powers of alienation,

THE VENDOR DOTH HEREBY FURTHER COVENANT WITH THE PURCHASER AS FOLLOWS:-

I) The VENDOR is the sole and absolute OWNER of the property hereby conveyed and that he has perfect right, title and interest to convey the said property to the Purchaser in the manner aforesaid and no other person has got any right, title and interest to convey the said property to the Purchaser in the manner aforesaid.

VENDOR

PURCHASER
For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

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Registering Officer

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II) The VENDOR doth hereby declare that hereafter the VENDOR nor his heirs has got any manner of Right, Title or Interest over the property hereby sold. Even if anybody claims any such right, such claim shall be null and void.

III) The VENDOR doth hereby declare that there are no encumbrance, lien, trust, attachment, claim, charge, whatsoever which is subsisting on the said property and that the said property is not the subject matter of any litigation or proceedings and is not charged in favour of any Court, Revenue or other authority. If, However, there happen to be any encumbrances or litigation over the property and are disclosed at a later date, the VENDOR undertakes to clear them at his own cost and own motion and also shall compensate the Purchaser if any losses or expenses if any, the Purchaser may be put to, owing to the existence of such encumbrances and defects binding the VENDOR's other properties movable and immovable and also binding himself personally.

IV) The VENDOR doth hereby covenant with the Purchaser that the Purchaser shall and may at all times hereafter quietly and peacefully possess and enjoy the said property without any let or interruption or disturbances by the VENDOR or by any one claiming through him.

V) The VENDOR doth hereby covenant with the Purchaser that he and all persons lawfully and equitably claiming title will from time to time and at all times hereafter at the cost of the Purchaser execute and register all such acts, deeds and things for further and more perfectly assuring the title of the Purchaser in respect of the property hereby conveyed.

VI) The VENDOR doth hereby covenant with the Purchaser that he shall sign and execute any rectification at the expenses of purchaser that may be necessary in order to make this sale absolute.

PURCHASER
For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

VENDOR

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VII) The VENDOR doth hereby covenant with the Purchaser that he has, this day handed over to the Purchaser all documents and records pertaining to the title of the schedule mentioned property.

VIII) The VENDOR doth hereby declare that all taxes and other public charges payable in respect of the schedule mentioned property hereby conveyed has been paid up to this date and further covenant with the Purchaser that there are no arrears of tax payable to Government or local body.

IX) The VENDOR doth hereby declare and assure the Purchaser that he shall indemnify and shall keep indemnified the Purchaser against any loss or damage that the Purchaser may be put to by reason of any kind of encumbrance over the property.

X) The VENDOR hereby expressly declares that the sale of property mentioned in the schedule hereunder is not in violation of any law.

XI) The VENDOR doth hereby covenant with the Purchaser that he shall sign and execute any rectification at the expenses of purchaser that may be necessary in order to make this sale absolute.

XII) The VENDOR doth hereby covenant with the Purchaser that he shall also sign and execute any letter or form that may be required for the mutation of name in the revenue records and transfer of Patta in favour of the Purchaser or for such other purposes.

To this effect, the VENDOR has executed this Deed of Absolute Sale on the day, month and year first above mentioned in the presence of following witnesses.

SCHEDULE OF PROPERTY

Karur District, Karur Registration District, Kulithalai Sub-Registration District, Kulithalai Taluk,

PURCHASER
For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

VENDOR

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Within limits of Kumaramangalam Village, in Ayan Punja Survey No.67,

South of : Kattalai Channel

West of : Nangam Channel

North of : Railway Line

East of : Lands belongs to Manisekar

Within this Four boundaries, Land measuring **Acre 0.98 Cents** (equal to Hectare 0.39.5) together with the pathway, easement, canal and irrigation rights etc.,

The Property lies within the limits of Kulithalai Taluk and presently comprised in Survey No.67 of Kumaramangalam Village vide Patta No.1221 respectively.

The Present market value of the Property is Rs.14,70,000/-.

PURCHASER
For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

VENDOR

Witnesses:

1. **(Ganesh)**, S/o. Panneer Selvam,
Door No.19/1, Nehruji Street, Nadar Medu, Erode Taluk & District – 638002.
(Aadhar No.6800 2116 8014)

2. (**Jeelan Basha),** S/o. Shaik Mahamood,
Door No.3/501-C-2, Anbu Nagar, Avalappalli Road, Hosur - 635109, Krishnagiri Dt. (Aadhar No.5189 1339 3001)



Drafted by:-
J.KAJA MOIDEEN,B.A.,M.L.,
Advocate, (Roll No.Ms3654/2010)
#71, 1st Floor, EVR Road,
Puthur, Trichy-620017.
Cell No. 99408-71076.

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The Statement Under Rule 3 (1) of Tamil Nadu Stamp (Prevention of Undervaluation of Instruments) Rules 1968

District:- Karur — Kulithalai S.R.Ö

Taluk :- Kulithalai — Village:- Kumaramangalam

Serial No	Survey No	Extent Acre - Cents	Nature of Property	Market Value
1	67	0 . 98	Punja	Rs.14,70,000/-
Total		**Acre 0 . 98 Cents**		**Rs.14,70,000/-**

DECLARATION

Affidavit that the Property is not situated in water body area.

(Declaration according to Judgment in W.P.(MD)No.22163/2018)

We certify that the property identified in this document is not comes under the category of water bodies, waterways or catchment areas.

We also understand that we may be subject to legal action if we are later found to have misrepresented or misrepresented them.

PURCHASER

For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

VENDOR

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R/Kulithalai/Book-1/835/2024

CERTIFICATE UNDER SECTION 42 OF THE INDIAN STAMP ACT 1899

S.No 636 of 2024

I hereby certify that a sum of ₹ 1,02,900/- (Rupees One Lakh Two Thousand Nine Hundred only) on account of deficit stamp duty has been levied under section 41 of the Stamp Act in respect of this instrument from Mr. தோட்டா கிரண் குமார் residing at No.324, 1st Floor, Golden Point, 4, Vasant Nagar, Bangalore, Karnataka, India, 560051.

Sub Registrar: Kulithalai
Date: 27/02/2024

Signature of Sub Registrar and Collector under Section 41 of the Indian Stamp Act

Presented in the office of the Sub Registrar of Kulithalai and fee of ₹ 30,210/- paid at 05:08 PM on the 27/02/2024 by

Left Thumb





For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

Additions as per recitals of document

Execution admitted by
Left Thumb





Identity of the person verified through Consent based AADHAAR Authentication using Thumb Impression with UIDAI reference No. : UKC:4499121a7ce89c4b5a4dc6865889fd20b9957f
(Details from UIDAI : Panneerselvam C , 07-01-1960, xxxxxxxx7865)



Claim admitted by
Left Thumb





For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

Identity of the person verified through Consent based AADHAAR Authentication using Thumb Impression with UIDAI reference No. UKC:[illegible]5575113e9524f408449a7f6cdf4e[illegible]2
(Details from UIDAI : Thota Kiran Kumar S/O



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பத்திர பதிவின் தொடர்ச்சியாக பட்டா மாறுதல் செய்யும் பொருட்டு பதிவு விவரங்கள் வட்டாட்சியர் அலுவலகத்திற்கு அனுப்பப்பட்டமைக்கான ஒப்புகைச்சீட்டு

ஒப்புகைச்சீட்டு எண்: TNIGRS/2024/Rural/32959748/27022024190358

ஆவண பதிவு எண்:	R/Kulithalai/புத்தகம் 1/835/2024	R/371/1/835/2024

கரூர் மாவட்டம், கரூர் பதிவு மாவட்டம், குளித்தலை வட்டம், குளித்தலை சார்பதிவாளர் அலுவலகம் குமாரமங்கலம் கிராமம், புல எண் / உட்பிரிவு 67-க்கு பட்டா மாறுதல் பெறுவதற்காக என்ற முகவரியில் வசிக்கும் - என்பவரால் குளித்தலை சார்பதிவாளர் அலுவலகத்தில் R/Kulithalai/புத்தகம் 1/835/2024 (பதிவு எண்) ன்படி மேற்கொள்ளப்பட்ட பதிவின் தொடர்ச்சியாக பட்டா மாறுதல் நடவடிக்கையின் பொருட்டு பதிவு விவரங்கள் குளித்தலை வட்டாட்சியர் அலுவலக குமாரமங்கலம் கிராமம் தொடர்பான குறுவட்ட அளவர் / கிராம நிர்வாக அலுவலருக்கு இணையம் வழியே 27/02/2024 அன்று விண்ணப்ப எண் 2024/0103/14/300387 ன் படி அனுப்பி வைக்கப்பட்டுள்ளது. புல ஆய்வு தொடர்பாக சம்மந்தப்பட்ட குறுவட்ட அளவர் அல்லது கிராம நிர்வாக அலுவலரிடமிருந்து தங்களது கைப்பேசிக்கு குறுஞ்செய்தி அனுப்பப்படும் எனவும், பட்டா மாறுதலுக்கு தனியே விண்ணப்பிக்க வேண்டிய அவசியம் இல்லை என இதன்மூலம் தெரிவிக்கப்படுகிறது.

சார்பதிவாளர்
குளித்தலை

நாள்: 27/02/2024

- மனுவின் தொடர் நடவடிக்கையின் நிலையை http://www.eservices.tn.gov.in என்ற இணையவழிச் சேவையில் உள்ள 'Know your Application Status' ல் பார்வையிடலாம்.
- மேலும், அபதிவேடு, சிட்டா, புலப்பட நகல் மற்றும் TSLR ஆகியவற்றை பார்வையிட்டு பதிவிறக்கம் செய்து கொள்ளலாம்.
- இது தொடர்பான புகார் ஏதும் இருப்பின் 1800 425 1333 - எனும் கட்டணமில்லா தொலைபேசி எண்ணை தொடர்பு கொள்ளலாம்.

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	Naga Venkata Siva Sai Gangadhara Rao, 05-06-1992, xxxxxxxx7541)	

27th day of February 2024

krishnan marappan
Sub Registrar
Kulithalai

Registered as Number **R/Kulithalai/Book-1/835/2024.**

Date: 27/02/2024
Kulithalai

krishnan marappan
Sub Registrar

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Registering Officer

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தமிழ்நாடு அரசு

வருவாய்த் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

மாவட்டம் : கரூர் வட்டம் : குளித்தலை

வருவாய் கிராமம் : குமாரமங்கலம் பட்டா எண் : 1221

உரிமையாளர்கள் பெயர்

1. சின்னப்ப கவுண்டர் மகன் பன்னீர்செல்வம்

புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	
67	-	0 - 39.50	2.32	--	--	--	--	2023/0103/14/281489- -- -- 11-10-2023
		0 - 39.50	2.32					

குறிப்பு2 :

1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் https://eservices.tn.gov.in என்ற இணைய தளத்தில் 14/03/001/01221/30146 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 22-02-2024 அன்று 10:01:38 AM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின்2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

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தமிழ்நாடு அரசு
பதிவுத்துறை
முன்பதிவு செய்ததற்கான ஒப்புகைச்சீட்டு

முன்பதிவு விவரம்

பதிவு செய்த நாள்	26/02/2024
முன்பதிவு நாள்	27/02/2024
முன்பதிவு நேரம்	12:00 - 13:00
முன்பதிவு வரிசை எண்	3 [D303]
பதிவு வகை	ஆவணப் பதிவு
தற்காலிக எண்	TP/175201337/2024

விண்ணப்பதாரர் விவரம்

விண்ணப்பதாரர் பெயர்	திரு. தோட்டா கிரண் குமார்
தந்தை / கணவர் பெயர்	திரு. நாக வெங்கட சிவ சாய் கங்காதர ராவ்
சார்பதிவாளர் அலுவலகம்	குளித்தலை
சொத்து அமைந்துள்ள கிராமம்	குமாரமங்கலம்

குறிப்பு:

1. முன்பதிவு செய்த நபர் அவருக்காக ஒதுக்கப்பட்ட நேரத்திற்கு தவறாமல் அலுவலகத்திற்கு வந்து ஆவணத்தை பதிவுக்கு தாக்கல் செய்ய கோரப்படுகிறார்.
2. முன்பதிவு செய்த நபர் குறித்த நேரத்தில் வரவில்லையெனில் அடுத்த முன்பதிவு செய்த நபரின் ஆவணம் பதிவுக்கு எடுத்துக்கொள்ளப்படும். தவறவிட்டவரின் முன்பதிவு அடுத்த முன்பதிவு நேரத்தில் கடைசியாக வைக்கப்படும்.
3. முன்பதிவு நேரத்தில் ஒதுக்கப்பட்ட அனைத்து வரிசை எண்களுக்கான பதிவு மேற்கொண்ட பின்பே அடுத்த முன்பதிவு நேரத்தின் வரிசை எண்களுக்கான பதிவு தொடங்கும்.
4. ஆவணப்பதிவிற்கான அனைத்து ஆதாரங்களும் தாக்கல் செய்யப்படும் நிலையில் ஆவணம் பதிவு செய்யப்படும். ஆவணப்பதிவிற்கு தேவையான ஆதாரங்கள் ஏதும் இல்லாத நிலை மற்றும் பதிவுக்கு ஏதும் தடையிருப்பின் பதிவு மறுப்புச் சீட்டு உருவாக்கப்பட்டு சார்பதிவாளரால் கையொப்பமிடப்பட்டு வழங்கப்படும்.
5. பதிவு செய்யப்பட்ட ஆவணம், தாக்கல் செய்தவருக்கு திரும்ப வழங்கப்படும். தாக்கல் செய்தவர் வர இயலாத நிலையில் ஆவணப்பதிவின் போதே வேறொரு நபரை ஆவணம் திரும்ப பெற நியமிக்கலாம். ஆவணப்பதிவின் போது நியமனம் செய்யப்பட்டவரின் விரல் ரேகை கவரப்படும். ஆவணம் திரும்ப அளிக்கும் போது அவரின் விரல் ரேகை மீண்டும் கவரப்பட்டு ஒப்பிட்டு சரிபார்த்தபின்பே ஆவணம் திரும்ப வழங்கப்படும்.

ஏதேனும் சந்தேகங்கள்/குறைகள் இருப்பின் கீழ்க்கண்ட வழிமுறைகளில் தெரிவிக்கலாம்	
கட்டணமில்லா தொலைபேசி எண்	1800 102 5174
மாற்று மின்னஞ்சல் முகவரி	helpdesk@tnreginet.net

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பதிவுத்துறை

இரசீது - ஆவணப்பதிவு

இரசீது எண் : 1326/2024

ஆவண எண் : R/ Kulithalai/ புத்தகம்-1/ 835 / 2024

திரு தோட்டா கிரண் குமார் அவர்களிடமிருந்து ₹ 1,33,110 (ரூபாய் ஒரு இலட்சத்து முப்பத்து மூன்றாயிரத்து நூற்று பத்து மட்டும்) [இணைய வழி: REG202402230519045 ₹ 133110] கீழ்க்கண்ட விவரப்படி பெற்றுக் கொள்ளப்பட்டது.

வ.எண்	விவரம்	தொகை (₹)
1	முத்திரைத்தீர்வை (முத்திரைச் சட்டம் பிரிவு 41ன் படி)	1,02,90
2	பதிவுக் கட்டணம்	29,40
3	கணினிக் கட்டணம்	70
4	குறுந்தகடுக் கட்டணம்	10
5	ஆவண எழுத்தர் நலநிதி	1
	செலுத்தப்பட்ட மொத்தத் தொகை	1,33,11

குறிப்பு: இந்த அசல் ஆவணம் உடனடியாக பக்க சான்று இடப்பட்டு ஒளி வருட செய்யப்பட்டு திரும்ப வழங்கப்படும். ஆகவே அசல் ஆவணத்தைத் திரும்பப் பெற தகு பெற்ற திரு / திருமதி /செல்வி திரு JEELAN BASHA இது தொடர்பாக குறுஞ்செய்த பெற்றவுடன் அசல் ரசீதை அளித்து அசல் ஆவணத்தை திரும்ப பெற்றுக்கொள்ளலாப் இதில் ஏதேனும் இடர்பாடுகள் இருப்பின் கட்டணமில்லா தொலைபேசி எண் 1800-102-517 - ஐ தொடர்பு கொள்ளவும்.

குளித்தலை அலுவலகம்

நாள்: 27/02/2024

பதிவு அலுவலர் கையொப்பம்

உருவாக்கப்பட்ட ஆவண/ வரைவு ஆவணச் சுருக்க விவரங்கள்			
பயனர் பெயர்	முழுப் பெயர்	கைப்பேசி எண்	உருவாக்கப்பட்ட நாள்
arumugabalaa (குடிமக்கள்)	KARPAGA VINAYAGAR	8825553322	23-02-24 07:38:32 PM

1. அசல் ஆவணத்தைத் திரும்பப் பெரும்போது உரிய நபரின் விரல் ரேகை பெறப்படுகிறதா என உறுதிசெ கொள்ளவும்.
2. ஆவணதாரர்கள் தங்களின் சரியான கைபேசி எண்ணைப் பதிவுக்கு தாக்கலாகும் ஆவணத்தில் தெரிவித்தா ஆவணம்/சொத்தின் நிலை குறித்த குறுஞ்செய்தியை பெறலாம்.
3. ஆவணத்தை குறித்த காலத்தில் திரும்பப் பெற்றுக்கொள்ளத் தவறும் பட்சத்தில் பாதுகாப்பு கட்டணம் வசூலிக்கப்படு
4. பட்டா மாற்றம் தேவைப்படும் ஆவணங்களுக்கு பட்டா மாற்றம் செய்யக் கோரும் படிவம் இவ்வலுவலகத்தி இருந்து இணையதளம் வழியாகவே வருவாய்த்துறைக்கு அனுப்பப்பட்டுள்ளது. அதன் ஒப்புகைச் சீட்டை தங்களி அசல் ஆவணத்தைத் திரும்பப் பெறும்போது கேட்டுப் பெற்றுக்கொள்ளவும்.

https://tnreginet.gov.in என்ற இணைய தளம் மூலம் வழங்கப்படும் சேவைகள்

- கட்டணமின்றி வில்லங்க விவரம் தரவிறக்கம் செய்யும் வசதி
- சார் பதிவாளர் அலுவலகம் நேரில் வராமல் இணையதளம் மூலம் சான்றிட்ட நகல்கள், வில்லங்க சான்று விபரங்க விண்ணப்பித்து மின்னஞ்சல் மூலம் சான்று பெரும் வசதி
- இணையதளம் மூலம் பொது மக்களே ஆவணம் உருவாக்கும் வசதி
- இணையதளம் மூலம் வழிகாட்டி மதிப்பை அறியும் வசதி, கட்டிட மதிப்பை கணக்கிடும் வசதி
- இணையதளம் மூலம் முத்திரைத் தீர்வை, பதிவுக் கட்டணம் உள்ளிட்ட கட்டணங்கள் செலுத்தும் வசதி
- பொதுமக்கள் நலன் சார்ந்த சுற்றறிக்கைகள்/அரசாணைகள் பதிவுத்துறையின் இணையதளத்தில் பார்வையிடும் வசதி

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Government of India

பன்னீர்செல்வம் சி
Panneerselvam C
பிறந்த நாள்/DOB: 07/01/1960
ஆண்/ MALE

2618 2306 7865
VID : 9125 9945 9452 4471
எனது ஆதார், எனது அடையாளம்

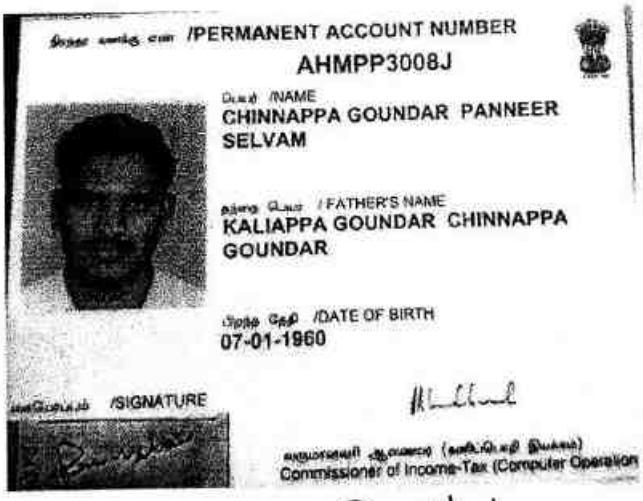


Unique Identification Authority of India

முகவரி:
த/ பெ சின்னப்ப கவுண்டர், எண் 333
திருமுருகன் நகர், பெட்டவாய்த்தலை,
திருச்சிராப்பள்ளி,
தமிழ் நாடு - 639112

Address:
S/O CHINNAPPA GOUNDER, NO 333
THIRUMURUGAN NAGAR, Pettavathalai,
Tiruchirappalli,
Tamil Nadu - 639112

2618 2306 7865
VID : 9125 9945 9452 4471
1947 | help@uidai.gov.in | www.uidai.gov.in



/PERMANENT ACCOUNT NUMBER
AHMPP3008J

/NAME
CHINNAPPA GOUNDAR PANNEER SELVAM

/FATHER'S NAME
KALIAPPA GOUNDAR CHINNAPPA GOUNDAR

/DATE OF BIRTH
07-01-1960

/SIGNATURE

Commissioner of Income-Tax (Computer Operation

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Registering Officer

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भारत सरकार
Government of India

आधार

भारतीय विशिष्ट पहचान प्राधिकरण
Unique Identification Authority of India

Enrolment No.: 0647/02766/07908

To
Thota Kiran Kumar
S/O Naga Venkata Siva Sai Gangadhara Rao
1-188-28
siva ganga
siva ganga
Machilipatnam
Krishna Andhra Pradesh - 521001
9071357624

आपका आधार क्रमांक / Your Aadhaar No. :
4285 8191 7541
VID : 9166 9218 3186 3447
मेरा आधार, मेरी पहचान

Government of India

AADHAAR

सूचना

- आधार पहचान का प्रमाण है, नागरिकता का नहीं।
- सुरक्षित QR कोड / ऑफलाइन XML / ऑनलाइन ऑथेंटिकेशन से पहचान प्रमाणित करें।
- यह एक इलेक्ट्रॉनिक प्रक्रिया द्वारा बना हुआ पत्र है।

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- This is electronically generated letter.

- आधार देश भर में मान्य है।
- आधार कई सरकारी और गैर सरकारी सेवाओं को पाना आसान बनाता है।
- आधार में मोबाइल नंबर और ईमेल ID अपडेट रखें।
- आधार को अपने स्मार्ट फोन पर रखें, mAadhaar App के साथ।

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- Carry Aadhaar in your smart phone – use mAadhaar App.

भारत सरकार
Government of India

आधार

Issue Date : 11/12/2011

Thota Kiran Kumar
Date of Birth/DOB: 05/06/1992
Male/ MALE

4285 8191 7541
VID : 9166 9218 3186 3447
मेरा आधार, मेरी पहचान

भारतीय विशिष्ट पहचान प्राधिकरण
Unique Identification Authority of India

AADHAAR

Download Date: 31/01/2023

Address:
S/O Naga Venkata Siva Sai Gangadhara Rao,
1-188-28, siva ganga, siva ganga,
Machilipatnam, Krishna,
Andhra Pradesh - 521001

4285 8191 7541
VID : 9166 9218 3186 3447

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For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

Document No. 835 of 2024 of Book
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Registering Officer

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सत्यमेव जयते

GOVERNMENT OF INDIA
MINISTRY OF CORPORATE AFFAIRS

Central Registration Centre

Certificate of Incorporation

[Pursuant to sub-section (2) of section 7 and sub-section (1) of section 8 of the Companies Act, 2013 (18 of 2013) and rule 18 of the Companies (Incorporation) Rules, 2014]

I hereby certify that GREENERGY PURE ETHANOL PRIVATE LIMITED is incorporated on this First day of July Two thousand twenty-two under the Companies Act, 2013 (18 of 2013) and that the company is limited by shares.

The Corporate Identity Number of the company is U24200KA2022PTC163272.

The Permanent Account Number (PAN) of the company is **AAJCG8851F** *

The Tax Deduction and Collection Account Number (TAN) of the company is **BLRG29460E** *

Given under my hand at Manesar this First day of July Two thousand twenty-two .

Digital Signature Certificate
SHIVARAJ C RANJERI
ASST. REGISTRAR OF COMPANIES
For and on behalf of the Jurisdictional Registrar of Companies
Registrar of Companies
Central Registration Centre

Disclaimer: This certificate only evidences incorporation of the company on the basis of documents and declarations of the applicant(s). This certificate is neither a license nor permission to conduct business or solicit deposits or funds from public. Permission of sector regulator is necessary wherever required. Registration status and other details of the company can be verified on www.mca.gov.in

---

Mailing Address as per record available in Registrar of Companies office:

GREENERGY PURE ETHANOL PRIVATE LIMITED
No.324, 1st Floor, Golden Point 4,, Vasnat Nagar, Bengaluru, Bangalore,
Karnataka, India, 560051

* as issued by the Income Tax Department

For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

Document No. 835 of 2024 of Book 1 Contains 17 Sheets 13 Sheet

Registering Officer

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GREENERGY PURE ETHANOL PRIVATE LIMITED

Regd. Off: No.324, Golden Point 4, Off. Queens Road Cross, Vasant Nagar, Bengaluru 560052, KA, IN
Ph: 080- 49222222 II Email: cs@goldengrp.co.in II CIN: U24200KA2022PTC163272

CERTIFIED TRUE COPY OF THE RESOLUTION PASSED AT THE MEETING OF THE BOARD OF DIRECTORS OF GREENERGY PURE ETHANOL PRIVATE LIMITED HELD AT THE REGISTERED OFFICE OF THE COMPANY ON 5TH FEBRUARY 2024 AT 9.00 AM

SUB: AUTHORIZATION FOR PURCHASE OF LANDS IN THE NAME OF COMPANY

RESOLVED THAT pursuant to applicable provisions of Companies Act, 2013 and other applicable statutory rules and regulations and subject to approval of government authorities, the approval of the Board of Directors, be and is hereby accorded to the Company to purchase parcels of Lands as detailed below and indicated in the Site Plans in terms of agreements proposed to be entered into by the Company and for consideration as agreed between the parties to agreements.

1. **Lands in Survey Nos. 63, 65/2, 65/3 presently comprised in New Survey Nos. 63/2, 65/2 & 65/3B of Kumaramangalam Village, total extent of Acre 5.60 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.**
2. **Lands in Survey Nos. 68/1A, 70, 68/1B, presently comprised in New Survey Nos. 68/1A1, 70/1 & 68/1B1 of Kumaramangalam Village, total extent of Acre 3.77 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.**
3. **Lands in Survey No. 63 presently comprised in New Survey No. 63/1 of Kumaramangalam Village, total extent of Acre 2.00 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.**
4. **Lands in Survey Nos. 63, 65/1, 65/3 presently comprised in New Survey Nos. 63/1, 65/1 & 65/3A of Kumaramangalam Village, total extent of Acre 3.60 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.**
5. **Lands in Survey No. 67 of Kumaramangalam Village, total extent of Acre 0.98 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.**
6. **Lands in Survey Nos. 68/1A, 70 presently comprised in New Survey Nos. 68/1A2, 70/2 of Kumaramangalam Village, total extent of Acre 2.85 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.**
7. **Lands in Survey No. 68/1B of Kumaramangalam Village, total extent of Acre 0.90 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.**
8. **Lands in Survey Nos. 68/2, 69/2, 69/1, 72/2 of Kumaramangalam Village, total extent of Acre 2.35 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.**

RESOLVED FURTHER THAT Mr.Thota Kiran Kumar, S/o. Mr. Naga Venkata Sai Siva Gangadhara Rao Thota, bearing PAN ASWPT6006F and Aadhar No 428581917541;Manager of the Company; be and is hereby authorized to communicate on behalf of the company with their Vendor, Government Officials and to represent the company before the concerned Sub Registrar Office, to sign the sale agreements and sale deeds on behalf of the company and to get register the Sale

For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

For Greenergy Pure Ethanol Pvt Ltd
Authorised Signatory

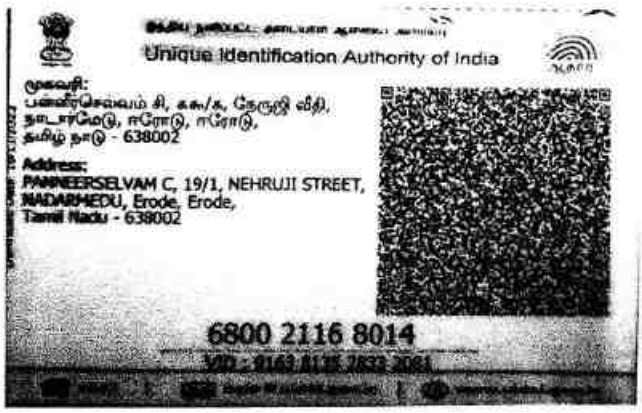
Document No. 825 of 2024 of Book 1
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Document No. 835 of 2024 of Book 1 Contains 17 Sheets 15 Sheet

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ஜீலான் பாஷா S
Jeelan Basha S
பிறந்த நாள் / DOB : 07/03/1980
ஆண் / Male

Aadhaar is proof of identity, not of citizenship or date of birth. It should be used with verification (online authentication, or scanning of QR code / offline KYC).

5189 1339 3001

मेरा आधार, मेरी पहचान



முகவரி: S/O ஷேக் முகமது, 3/501-சி-2,
அண்ணா நகர், அவலப்பள்ளி ரோடு,
ஒசூர், கிருஷ்ணகிரி, தமிழ் நாடு, 635109
Address: S/O Shaik Mahamood, 3/501-c-2,
Annu Nagar, Avalapalli Road, Hosur,
PO:Hosur, DIST:Krishnagiri, Tamil Nadu,
635109

5189 1339 3001

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For M/s.Greenergy Pure Ethanol
Private Limited

Manager/Authorized Signatory

Document No. 835 of 2024 of Book
Contains 17 Sheets 17 Sheet

Registering Officer

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836/2024

भारतीय गैर न्यायिक

एक सौ रुपये

Rs. 100

रु. 100

ONE HUNDRED RUPEES

सत्यमेव जयते

भारत INDIA

INDIA NON JUDICIAL

தமிழ்நாடு तमिलनाडु TAMILNADU 16 FEB 2024

DW 568450

M/s. Greenergy Pure Ethanol Pvt., Ltd.
Bangalore.

அ. அம்மாசி
மாவட்ட நீதிமன்றம்
மாவட்ட நீதி மன்ற வளாகம்
எண்: 2/2000, திருச்சி
செல் எண்: 93451 61811

SALE DEED

This Deed of Absolute Sale made and executed at Kulithalai on this 26th day of February, 2024.

Mr. Panneer Selvam, S/o.Chinnappa Gounder, residing at No.333, Thirumurugan Nagar, Pettavaithalai, Srirengam Taluk, Trichirapalli District. Tamil Nadu **(Aadhaar No.2618 2306 7865 & Pan No.AHMPP3008J)** herein after called the 'VENDOR'.

VENDOR

PURCHASER

For M/s.Greenergy Pure Ethanol Private Limited

Authorised

Manager/Authorized Signatory

Document No. 836 of 2024 of Book 1 Contains 22 Sheets 1 Sheet

Registering Officer

To and In-Favor of **M/s.GREENERGY PURE ETHANOL PRIVATE LIMITED, (PAN - AAJCG8851F)** registered under the Companies Act vide CIN - U24200KA2022PTC163272, having Office at No.324, 1st Floor, Golden Point, 4, Vasant Nagar, Bangalore - 560051, State of Karnataka, represented by its Manager/Authorized Signatory, **Mr. Thota Kiran Kumar,** S/o. Naga Venkata Siva Sai Gangathara Rao, (Id Aadhar No.4285 8191 7541) authorized under Board Resolution dated 05.02.2024 by M/s. Greenergy Pure Ethanol Private Limited, herein after called the' PURCHASER'

The terms VENDOR and PURCHASER, wherever it may occur shall mean and include themselves, their heirs, legal representatives, executors, administrators and assigns.

This Deed of Sale Witnesseth as follows

Whereas the VENDOR is the sole, legal, true absolute and exclusive Owner of the property viz., **Lands in Survey Nos.68/2, 69/2, 69/1 & 72/2 of Kumaramangalam Village Total Extent of Acre 2.35 Cents** which is more fully and particularly described in the schedule hereunder, which he has purchased from and out of his own funds and his name from Arunachalam & another and Lakshmanan on 15.04.2004 and 24.01.2019 under the Registered Sale Deeds bearing **Document Nos.549/2004 and 157/2019** in Book 1 on the file of the Sub Registrar Office, Kulithalai, Karur District respectively.

Ever since the VENDOR has been in continuous, uninterrupted peaceful possession and enjoyment of the said property, with full powers of alienation, without any let or hindrances, paying all taxes and outgoing payable to the Government and Local Authorities and has got valid and marketable title to the said property.

And Whereas the VENDOR has offered to sell the Schedule mentioned property and the Purchaser has also accepted to buy the Schedule mentioned property

PURCHASER
For M/s.Greenergy Pure Ethanol Private Limited
Authorised
Manager/Authorized Signatory

Document No. 836 of 2024 of Book 1 Contains 22 Sheets 2 Sheet
Registering Officer

VENDOR

For a net Sale Consideration of Rs.40,00,000/- (Rupees Forty Lakhs Only), free from all encumbrances, for which sum the VENDOR has also agreed to convey the Sale of Schedule mentioned Property, unto the Purchaser free from all encumbrances.

Whereas after deducting the TDS of 1% i.e., Rs.40,000/- from the above said amount, the VENDOR has received the entire Sale Consideration of the sum of Rs.39,60,000/- (Rupees Thirty Nine Lakhs and Sixty Thousand Only) from the Purchaser with full satisfaction by way of Demand Draft drawn on Union Bank of India, Bangalore Cantonment Branch, Bangalore vide D.D.No.836095 dated 26.02.2024.

NOW THIS DEED OF ABSOLUTE SALE WITNESSETH AS FOLLOWS:-

In pursuance of the above said mutually agreed terms and in consideration of the above said sum of Rs.39,60,000/- (Rupees Thirty Nine Lakhs and Sixty Thousand Only) already paid by the PURCHASER to the VENDOR as stated above, the VENDOR doth hereby sell, convey, grant, transfer and assign, by way of absolute sale to and in favor of the Purchaser herein the Sale Property which is more fully and particularly described in the schedule hereunder, together with all ways, waters, water courses, ditches easements, advantages, liberties, rights and privileges, and all other appurtenances whatsoever appertaining thereto, to have and to hold the same as absolute owner with all powers of alienation,

THE VENDOR DOTH HEREBY FURTHER COVENANT WITH THE PURCHASER AS FOLLOWS:-

I) The VENDOR is the sole and absolute OWNER of the property hereby conveyed and that he has perfect right, title and interest to convey the said property to the Purchaser in the manner aforesaid and no other person has got any right, title and interest to convey the said property to the Purchaser in the manner aforesaid.

VENDOR

PURCHASER

For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

Document No. 836 of 2024 of Book 1 Contains 22 Sheets 3 Sheet

Registering Officer

II) The VENDOR doth hereby declare that hereafter the VENDOR nor his heirs has got any manner of Right, Title or Interest over the property hereby sold. Even if anybody claims any such right, such claim shall be null and void.

III) The VENDOR doth hereby declare that there are no encumbrance, lien, trust, attachment, claim, charge, whatsoever which is subsisting on the said property and that the said property is not the subject matter of any litigation or proceedings and is not charged in favour of any Court, Revenue or other authority. If, However, there happen to be any encumbrances or litigation over the property and are disclosed at a later date, the VENDOR undertakes to clear them at his own cost and own motion and also shall compensate the Purchaser if any losses or expenses if any, the Purchaser may be put to, owing to the existence of such encumbrances and defects binding the VENDOR's other properties movable and immovable and also binding himself personally.

IV) The VENDOR doth hereby covenant with the Purchaser that the Purchaser shall and may at all times hereafter quietly and peacefully possess and enjoy the said property without any let or interruption or disturbances by the VENDOR or by any one claiming through him.

V) The VENDOR doth hereby covenant with the Purchaser that he and all persons lawfully and equitably claiming title will from time to time and at all times hereafter at the cost of the Purchaser execute and register all such acts, deeds and things for further and more perfectly assuring the title of the Purchaser in respect of the property hereby conveyed.

VI) The VENDOR doth hereby covenant with the Purchaser that he shall sign and execute any rectification at the expenses of purchaser that may be necessary in order to make this sale absolute.

VII) The VENDOR doth hereby covenant with the Purchaser that he has, this day handed over to the Purchaser all documents and records pertaining to the title of the schedule mentioned property.

PURCHASER

For M/s.Greenergy Pure Ethanol Private Limited

Authorised

Manager/Authorized Signatory

Document No. 836 of 2021 of Book 1 Contains 22 Sheets 4 Sheet

Registering Officer

VENDOR

VIII) The VENDOR doth hereby declare that all taxes and other public charges payable in respect of the schedule mentioned property hereby conveyed has been paid up to this date and further covenant with the Purchaser that there are no arrears of tax payable to Government or local body.

IX) The VENDOR doth hereby declare and assure the Purchaser that he shall indemnify and shall keep indemnified the Purchaser against any loss or damage that the Purchaser may be put to by reason of any kind of encumbrance over the property.

X) The VENDOR hereby expressly declares that the sale of property mentioned in the schedule hereunder is not in violation of any law.

XI) The VENDOR doth hereby covenant with the Purchaser that he shall sign and execute any rectification at the expenses of purchaser that may be necessary in order to make this sale absolute.

XII) The VENDOR doth hereby covenant with the Purchaser that he shall also sign and execute any letter or form that may be required for the mutation of name in the revenue records and transfer of Patta in favour of the Purchaser or for such other purposes.

To this effect, the VENDOR has executed this Deed of Absolute Sale on the day, month and year first above mentioned in the presence of following witnesses.

SCHEDULE OF PROPERTY

Karur District, Karur Registration District, Kulithalai Sub-Registration District, Kulithalai Taluk,

1) Within the limits of Kumaramangalam Village, in Ayan Nanja Survey No.68/2 in Land measuring **Acre 1.16 Cents** with 800 square feet Asbestos shed building thereon and Bore-Well in it along with 5 H.P. Electric Motor vide E.B.Service Connection No.06-228-003-613.

PURCHASER

For M/s.Greenergy Pure Energy Private Limited

Manager/Authorized Signatory

Document No. 836 of 2024 of Book 1 Contains 22 Sheets 5 Sheet

Registering Officer

VENDOR

North by : Railway Line

East by : Boundary of Pettavaithalai Village

South by : Lands in Survey No.69/2

West by : Lands belongs to Panneer Selvam

Within this Four Boundaries, Total Extent of **Acre 1.16 Cents**

2) Within the limits of Kumaramangalam Village, in Ayan Nanja Survey No.69/2 in Land measuring **Acre 0.81 Cents** (Equal to Hectare 0.33.0)

North by : Lands in Survey No.68/2

East by : Boundary of Pettavaithalai Village

South by : Vadivu Canal

West by : Lands in Survey No.69/1

Within this Four Boundaries, Total Extent of **Acre 0.81 Cents**

3) Within the limits of Kumaramangalam Village, in Ayan Nanja Survey No.69/1 in Land measuring **Acre 0.18 Cents** out of Acre 0.48 Cents (Equal to Hectare 0.19.5)

North by : East to West Pathway

East by : Lands in Survey No.69/2

South by : Lands belongs to Karumbayee Ammal

West by : Lands in Survey No.72/2

Within this Four Boundaries, Total Extent of **Acre 0.18 Cents**

4) Within the limits of Kumaramangalam Village, in Ayan Nanja Survey No.69/1 in Well attached with 7½ H.P. Electric Motor and its absolute usufructuary rights with E.B.Service Connection No.06-228-003-256.

5) Within the limits of Kumaramangalam Village, in Ayan Nanja Survey No.72/2 in Land measuring **Acre 0.20 Cents** (Equal to Hectare 0.08.0) out of Hectare 0.48.5

PURCHASER

For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

Instrument No. 836 of 2024 of Book 1 Contains 22 Sheets 6 Sheet

Registering Officer

VENDOR

North by : East to West Pathway

East by : Lands in Survey No.69/1

South by : Vadivu Irrigation Canal

West by : Vadivu Canal

Within this Four Boundaries, Total Extent of **Acre 0.20 Cents**

Total Extent of above said Lands in Item Nos.1, 2, 3, 4 & 5 is **Acre 2.35 Cents (Equal to Hectare 0.95.0)** together with the pathway, easement, canal and irrigation rights etc.,

The Property lies within the limits of Kulithalai Taluk and presently comprised in New Survey Nos.68/2, 69/2, 69/1 & 72/2 of Kumaramangalam Village vide Patta Nos.1, 233 & 305 respectively.

The Present market value of the Property is Rs.40,00,000/-.

VENDOR

PURCHASER

For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

Witnesses:

1. **(Ganesh)**, S/o. Panneer Selvam,
Door No.19/1, Nehruji Street, Nadar Medu, Erode Taluk & District – 638002.
(Aadhar No.6800 2116 8014)

2. **(Jeelan Basha)**, S/o. Shaik Mahamood,
Door No.3/501-C-2, Anbu Nagar, Avalappalli Road, Hosur - 635109, Krishnagiri Dt.
(Aadhar No.5189 1339 3001)



Drafted by:-
J.KAJA MOIDEEN,B.A.,M.L.,
Advocate, (Roll No.Ms3654/2010)
#71, 1st Floor, EVR Road,
Puthur, Trichy-620017.
Cell No. 99408-71076.

Document No. 836 of 2024 of Book 1 Contains 22 Sheets 7 Sheet

Registering Officer

The Statement Under Rule 3 (1) of Tamil Nadu Stamp (Prevention of Undervaluation of Instruments) Rules 1968

District:- Karur — Kulithalai S.R.O

Taluk :- Kulithalai — Village:- Kumaramangalam

Serial No	Survey No	Extent Acre - Cents	Nature of Property	Market Value
1	68/2	1 . 16	Nanja	Rs.17,40,000/-
2	69/2	0 . 81	Nanja	Rs.12,15,000/-
3	69/1	0 . 18	Nanja	Rs. 2,70,000/-
4	72/2	0 . 20	Nanja	Rs. 3,00,000/-
Total	**Acre 2 . 35 Cents**			**Rs.35,25,000/-**

DECLARATION

Affidavit that the Property is not situated in water body area.

(Declaration according to Judgment in W.P.(MD)No.22163/2018)

We certify that the property identified in this document is not comes under the category of water bodies, waterways or catchment areas.

We also understand that we may be subject to legal action if we are later found to have misrepresented or misrepresented them.

PURCHASER — **VENDOR**

For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

Document No. 836 of 2024 of Book 1 Contains 22 Sheets 8 Sheet

Registering Officer

Annexure – 1A

1. Description of Building

a. Construction of the Structure : Brick, Sand & Cement

b. Depth of foundation : 2 feet

c. Thickness of wall in Ground Floor : 1 feet

d. Whether teakwood used throughout : No

e. Flooring : Soil floor

2. Age of the Building : 20 years

3. Extent of the Land : Acre 2.35 Cents

Cost of the Land : Rs.35,25,000/-

Cost of Building : Rs. 4,00,000/-

4. Built-up Area

Floor	Type of Roofs					
	R.C.C	Madras Terrace Roof	Mangalore tile roof	Country tile	Asbestos Sheet Roof	Thatched Roof
In ground floor	-	-	-	-	800 square feet	-

5. Compound if any : No

6. Well and Bore-Well if any : 1 Well + 1 Bore Well

Total Value (Rs.25,000/- + RS.15,000/-) : Rs. 40,000/-

7. Is there any separate latrine or Chain septic tank : No

8. Electrical Connection + Motors : 2

Total Value : Rs. 35,000/-

9. Total Market Value : Rs.40,00,000/-

Date:- 26.02.2024

PURCHASER **VENDOR**

For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

Document No. 836 of 2024 of Book 1 Contains 22 Sheets 9 Sheet

Registering Officer

R/Kulithalai/Book-1/836/2024

CERTIFICATE UNDER SECTION 42 OF THE INDIAN STAMP ACT 1899

S.No 637 of 2024

I hereby certify that a sum of ₹ 2,80,000/- (Rupees Two Lakh Eighty Thousand only) on account of deficit stamp duty has been levied under section 41 of the Stamp Act in respect of this instrument from Mr. தோட்டா கிரண் குமார் residing at No.324, 1st Floor, Golden Point, 4, Vasant Nagar, Bangalore, Karnataka, India, 560051.

Sub Registrar: Kulithalai
Date: 27/02/2024

Signature of Sub Registrar and Collector under Section 41 of the Indian Stamp Act

Presented in the office of the Sub Registrar of Kulithalai and fee of ₹ 81,310/- paid at 05:11 PM on the 27/02/2024 by

Left Thumb





For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

Additions as per recitals of document

Execution admitted by

Left Thumb





Identity of the person verified through Consent based AADHAAR Authentication using Thumb Impression with UIDAI reference No. :
UKC:12201723baa602a40841aab78dd3155131c017
(Details from UIDAI : Panneerselvam C , 07-01-1960, xxxxxxxx7865)



Claim admitted by

Left Thumb





For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

Identity of the person verified through Consent based AADHAAR Authentication using Thumb Impression with UIDAI reference No. :
UKC:00[illegible]c7197a3742bcf4e3a48
(Details from UIDAI : Thota Kiran Kumar S/O Naga Venkata Siva Sai Gangadhara Rao, 05-06-1992,



Document No. 836 of 2024 of Book 1 Contains 22 Sheets 10 Sheet

Registering Officer

	xxxxxxxx7541)	

27th day of February 2024

krishnan marappan
Sub Registrar
Kulithalai

Registered as Number R/Kulithalai/Book-1/836/2024

Date: 27/02/2024
Kulithalai

krishnan marappan
Sub Registrar

Document No. 836 of 2024 of Book 1
Contains 22 Sheets 11 Sheet

Registering Officer

தமிழ்நாடு அரசு

வருவாய்த் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

மாவட்டம் : கரூர் வட்டம் : குளித்தலை

வருவாய் கிராமம் : குமாரமங்கலம் பட்டா எண் : 1

உரிமையாளர்கள் பெயர்

1. சின்னப்பகவுண்டர் மகன் பன்னீர்செல்வம்

புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	
68	2	0 - 47.00	2.75	--	--	--	--	D1414/118---- -- 24-07-2004
69	2	0 - 33.00	2.87	--	--	--	--	D1414/118---- -- 24-07-2004
68	1A2	--	--	0 - 51.50	12.09	--	--	2019/0105/14/025276--2019/14/03/000021SD -- 20-08-2019
68	1B2	--	--	0 - 36.25	8.51	--	--	2019/0105/14/025274--2019/14/03/000019SD -- 20-08-2019
		0 - 80.00	5.62	0 - 87.75	20.60			

குறிப்பு2 :

1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் **https://eservices.tn.gov.in** என்ற இணைய தளத்தில் **14/03/001/00001/30141** என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 24-02-2024 அன்று 01:17:09 PM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின்2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

Document No. 836 of 2024 of Book 1 Contains 22 Sheets 12 Sheet

Registering Officer

தமிழ்நாடு அரசு

வருவாய்த் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

மாவட்டம் : கரூர் வட்டம் : குளித்தலை

வருவாய் கிராமம் : குமாரமங்கலம் பட்டா எண் : 233

உரிமையாளர்கள் பெயர்

1.	சின்னப்பகவுண்டர்	மகன்	பன்னீர்செல்வம்
2.	இலட்சுமணன்	மனைவி	கரும்பாயிஅம்மாள்
3.	சின்னையா	மகன்	இலட்சுமணன்

புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	
69	1	--	--	0 - 19.50	4.54	--	--	D2004/120--- - - 24-07-2004
				0 - 19.50	4.54			

குறிப்பு2 :

1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் **https://eservices.tn.gov.in** என்ற இணைய தளத்தில் **14/03/001/00233/40168** என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 22-02-2024 அன்று 09:59:01 AM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின்2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

Document No. 836 of 2024 of Book 1 Contains 22 Sheets 13 Sheet

Registering Officer

தமிழ்நாடு அரசு

வருவாய்த் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

மாவட்டம் : கரூர் வட்டம் : குளித்தலை

வருவாய் கிராமம் : குமாரமங்கலம் பட்டா எண் : 305

உரிமையாளர்கள் பெயர்

1.	மாணிக்கம்	மகன்	பிச்சை முத்திரியர்
2.	சின்னப்பகவுண்டர்	மகன்	பன்னீர்செல்வம்
3.	சின்னையா	மகன்	இலட்சுமணன்

புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	
72	2	--	--	0 - 48.50	11.42	--	--	D1414/118---- -- 24-07-2004
				0 - 48.50	11.42			

குறிப்பு2 :

1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் **https://eservices.tn.gov.in** என்ற இணைய தளத்தில் **14/03/001/00305/50188** என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 22-02-2024 அன்று 09:56:56 AM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின்2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

For M/s.Greenergy Pure Ethanol Private Limited

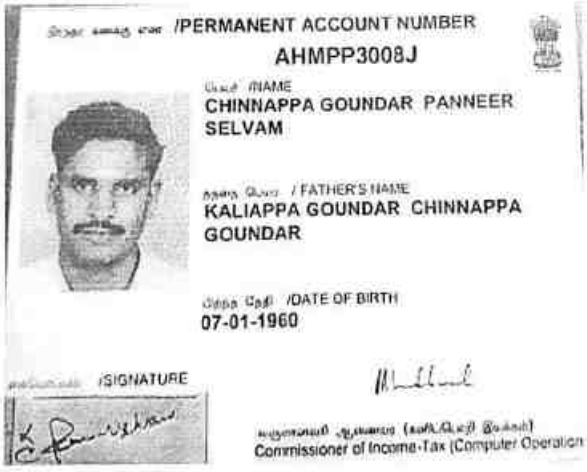
Manager/Authorized Signatory

Document No. 836 of 2024 of Book 1 Contains 22 Sheets 14 Sheet

Registering Officer







Document No. 836 of 2024 of Book 1 Contains 22 Sheets 15 Sheet

Registering Officer

भारत सरकार
Government of India

आधार

भारतीय विशिष्ट पहचान प्राधिकरण
Unique Identification Authority of India

Enrolment No.: 0647/02766/07908

To
Thota Kiran Kumar
S/O Naga Venkata Siva Sai Gangadhara Rao
1-188-28
siva ganga
siva ganga
Machilipatnam
Krishna Andhra Pradesh - 521001
9071357624

आपका आधार क्रमांक / Your Aadhaar No. :
4285 8191 7541
VID : 9166 9218 3186 3447
मेरा आधार, मेरी पहचान

Government of India

AADHAAR

सूचना

- आधार पहचान का प्रमाण है, नागरिकता का नहीं।
- सुरक्षित QR कोड / ऑफलाइन XML / ऑनलाइन ऑथेंटिकेशन से पहचान प्रमाणित करें।
- यह एक इलेक्ट्रॉनिक प्रक्रिया द्वारा बना हुआ पत्र है।

INFORMATION

- Aadhaar is a proof of identity, not of citizenship.
- Verify identity using Secure QR Code/ Offline XML/ Online Authentication.
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भारत सरकार
Government of India

आधार



Thota Kiran Kumar
Date of Birth/DOB: 05/06/1992
Male/ MALE

Issue Date: 11/12/2011

4285 8191 7541
VID : 9166 9218 3186 3447
मेरा आधार, मेरी पहचान

भारतीय विशिष्ट पहचान प्राधिकरण
Unique Identification Authority of India

AADHAAR

Address:
S/O Naga Venkata Siva Sai Gangadhara Rao,
1-188-28, siva ganga, siva ganga,
Machilipatnam, Krishna,
Andhra Pradesh - 521001

Download Date: 31/01/2023

4285 8191 7541
VID : 9166 9218 3186 3447

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For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

Document No. 836 of 2024 of Book 1 Contains 22 Sheets 16 Sheet

Registering Officer

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सत्यमेव जयते

GOVERNMENT OF INDIA
MINISTRY OF CORPORATE AFFAIRS

Central Registration Centre

Certificate of Incorporation

[Pursuant to sub-section (2) of section 7 and sub-section (1) of section 8 of the Companies Act, 2013 (18 of 2013) and rule 18 of the Companies (Incorporation) Rules, 2014]

I hereby certify that GREENERGY PURE ETHANOL PRIVATE LIMITED is incorporated on this First day of July Two thousand twenty-two under the Companies Act, 2013 (18 of 2013) and that the company is limited by shares.

The Corporate Identity Number of the company is U24200KA2022PTC163272.

The Permanent Account Number (PAN) of the company is **AAJCG8851F** *

The Tax Deduction and Collection Account Number (TAN) of the company is **BLRG29460E** *

Given under my hand at Manesar this First day of July Two thousand twenty-two .

MINISTRY OF CORPORATE AFFAIRS

Digital Signature Certificate
SHIVARAJ C RANJERI
ASST. REGISTRAR OF COMPANIES
For and on behalf of the Jurisdictional Registrar of Companies
Registrar of Companies
Central Registration Centre

Disclaimer: This certificate only evidences incorporation of the company on the basis of documents and declarations of the applicant(s). This certificate is neither a license nor permission to conduct business or solicit deposits or funds from public. Permission of sector regulator is necessary wherever required. Registration status and other details of the company can be verified on www.mca.gov.in

---

Mailing Address as per record available in Registrar of Companies office:

GREENERGY PURE ETHANOL PRIVATE LIMITED
No.324, 1st Floor, Golden Point 4,, Vasnat Nagar, Bengaluru, Bangalore,
Karnataka, India, 560051

* as issued by the Income Tax Department

For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

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Registering Officer

GREENERGY PURE ETHANOL PRIVATE LIMITED

Regd. Off: No.324, Golden Point 4, Off. Queens Road Cross, Vasant Nagar, Bengaluru 560052, KA, IN

Ph: 080- 49222222 II Email: cs@goldengrp.co.in II CIN: U24200KA2022PTC163272

CERTIFIED TRUE COPY OF THE RESOLUTION PASSED AT THE MEETING OF THE BOARD OF DIRECTORS OF GREENERGY PURE ETHANOL PRIVATE LIMITED HELD AT THE REGISTERED OFFICE OF THE COMPANY ON 5TH FEBRUARY 2024 AT 9.00 AM

SUB: AUTHORIZATION FOR PURCHASE OF LANDS IN THE NAME OF COMPANY

RESOLVED THAT pursuant to applicable provisions of Companies Act, 2013 and other applicable statutory rules and regulations and subject to approval of government authorities, the approval of the Board of Directors, be and is hereby accorded to the Company to purchase parcels of Lands as detailed below and indicated in the Site Plans in terms of agreements proposed to be entered into by the Company and for consideration as agreed between the parties to agreements.

1. Lands in Survey Nos. 63, 65/2, 65/3 presently comprised in New Survey Nos. 63/2, 65/2 & 65/3B of Kumaramangalam Village, total extent of Acre 5.60 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.
2. Lands in Survey Nos. 68/1A, 70, 68/1B, presently comprised in New Survey Nos. 68/1A1, 70/1 & 68/1B1 of Kumaramangalam Village, total extent of Acre 3.77 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.
3. Lands in Survey No. 63 presently comprised in New Survey No. 63/1 of Kumaramangalam Village, total extent of Acre 2.00 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.
4. Lands in Survey Nos. 63, 65/1, 65/3 presently comprised in New Survey Nos. 63/1, 65/1 & 65/3A of Kumaramangalam Village, total extent of Acre 3.60 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.
5. Lands in Survey No. 67 of Kumaramangalam Village, total extent of Acre 0.98 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.
6. Lands in Survey Nos. 68/1A, 70 presently comprised in New Survey Nos. 68/1A2, 70/2 of Kumaramangalam Village, total extent of Acre 2.85 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.
7. Lands in Survey No. 68/1B of Kumaramangalam Village, total extent of Acre 0.90 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.
8. Lands in Survey Nos. 68/2, 69/2, 69/1, 72/2 of Kumaramangalam Village, total extent of Acre 2.35 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.

RESOLVED FURTHER THAT Mr.Thota Kiran Kumar, S/o. Mr. Naga Venkata Sai Siva Gangadhara Rao Thota, bearing PAN ASWPT6006F and Aadhar No 428581917541;Manager of the Company; be and is hereby authorized to communicate on behalf of the company with their Vendor, Government Officials and to represent the company before the concerned Sub Registrar Office, to sign the sale agreements and sale deeds on behalf of the company and to get register the Sale

For M/s.Greenergy Pure Ethanol Private Limited

For Greenergy Pure Ethanol Pvt Ltd

Manager/Authorized Signatory

Authorised Signatory

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..... Contains 22 Sheets 18 Sheet

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Ganesh P

...ment No. 836 of 2024 of Book
1 Contains 22 Sheets 19 Sheet

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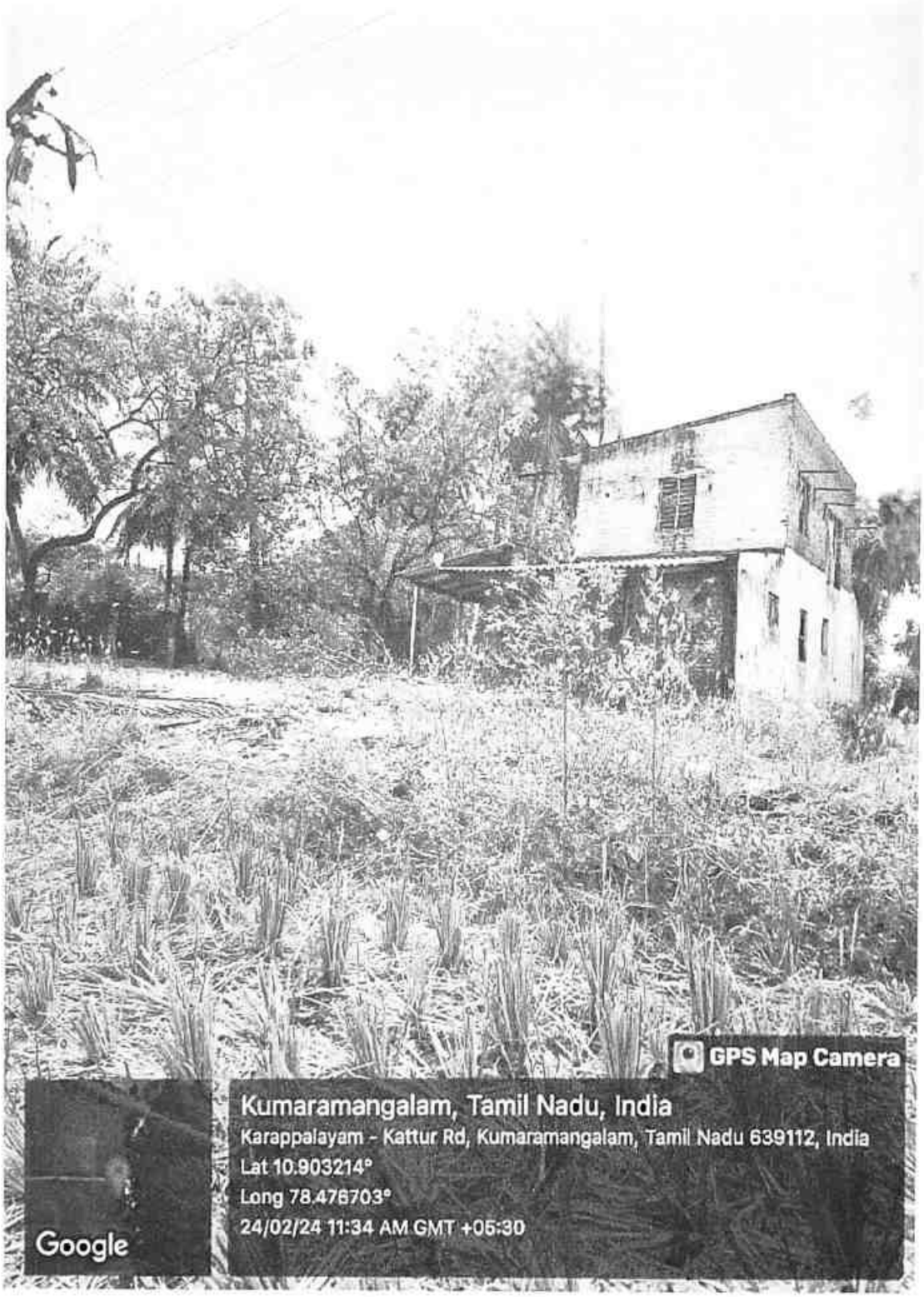




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Contains 22 Sheets 20 Sheet

Registering Officer



For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

Document No. 836 of 2024 of Book 1

Contains 22 Sheets 21 Sheet

Registering Officer



For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

Document No. 836 of 2024 of Book 1 Contains 22 Sheets 22 Sheet

Registering Officer

2844 /2023



தமிழ்நாடு तमिलनाडु TAMILNADU 18 JUL 2023

DA 339854

M/S. Greenergy Pure Ethanol Private ltd, Bangalore.

SALE DEED

This Deed of Absolute Sale made and executed at Kulithalai on this 12th day of July, 2023.

By **Mr. P.NAVEEN KUMAR,** Son of Panneer Selvam, aged 39 years, residing at Door No.43/1, Poosari Thottam, Soolai, Veerappan Chatram, Periyasemur, Erode - 638004, Tamil Nadu **(Id Aadhar No.7661 1060 9936 & PAN - APNPN4151R)** herein after called the 'VENDOR'.

PURCHASER **VENDOR**

Greenergy Pure Ethanol Pvt Ltd

Director

Naveen Kumar. P

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भारतीय गैर न्यायिक

एक सौ रुपये

Rs. 100

रु. 100

ONE HUNDRED RUPEES

सत्यमेव जयते

भारत INDIA

INDIA NON JUDICIAL

தமிழ்நாடு तमिलनाडु TAMILNADU

18 JUL 2023

DA 339855

M/s. Greenergy Pure Ethanol private ltd, Bangalore.

-2-

To and In-Favor of

M/s. GREENERGY PURE ETHANOL PRIVATE LIMITED, (PAN - AAJCG8851F) registered under the Companies Act vide CIN – U24200KA2022PTC163272 having Office at No.324, 1st Floor, Golden Point, 4, Vasant Nagar, Bangalore - 560051, State of Karnataka, represented by its Director, **Mr. SYED FAHAD,** S/o. S.M.Kamal Pasha, aged 36 years, residing at #03, 4th Main, Jayamahal Extension, Benson Town, Bangalore North, Bangalore - 560046, State of Karnataka. (Id Aadhar No. 8500 0227 3773) herein after called the' PURCHASER'

PURCHASER **VENDOR**

Greenergy Pure Ethanol Pvt. Ltd.

Director

Praveen Kumar P

Document No. 2844 of 2023 of Book 1 Contains 24 Sheets 2 Sheet

Registering Officer



தமிழ்நாடு तमिलनाडु TAMILNADU - 8 JUL 2023

DA 339856

M/s. Greenergy Pure Ethanol Private Ltd, Bangalore.

The terms VENDOR and PURCHASER, wherever it may occur shall mean and include themselves, their heirs, legal representatives, executors, administrators and assigns.

This Deed of Sale Witnesseth as follows

Whereas the VENDOR is the sole, legal, true absolute and exclusive Owner of the property viz., **Lands in Survey Nos.64/1, 64/2 & 61 and presently comprised in Survey Nos.64/1A, 64/2A & 61/1 of Kumaramangalam Village Total Extent of Acre 6.77¼ Cents**

VENDOR

PURCHASER

Greenergy Pure Ethanol Pvt Ltd

Director

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Registering Officer

भारतीय गैर न्यायिक

एक सौ रुपये

Rs. 100

रु. 100

ONE HUNDRED RUPEES

सत्यमेव जयते

भारत INDIA

INDIA NON JUDICIAL

தமிழ்நாடு तमिलनाडु TAMILNADU

E.8 JUL 2023

DA 339857

M/s. Greenergy Pure Ethanol Private Ltd. Bangalore

Which is more fully and particularly described in the schedule hereunder, which he has purchased from and out of his self acquired funds and his name from L.Jothimani on 24.01.2019 under a Registered Sale Deed bearing **Document No.159/2019** in Book 1 on the file of the Sub Registrar Office, Kulithalai, Karur District.

Ever since the VENDOR has been in continuous, uninterrupted peaceful possession and enjoyment of the said property, with full powers of alienation, without any let or hindrances, paying all taxes and outgoing payable to the Government and Local Authorities and has got valid and marketable title to the said property.

PURCHASER **VENDOR**

Greenergy Pure Ethanol Pvt Ltd

Director

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Registering Officer

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भारतीय गैर न्यायिक

एक सौ रुपये

Rs. 100

रु. 100

ONE HUNDRED RUPEES

सत्यमेव जयते

भारत INDIA

INDIA NON JUDICIAL

தமிழ்நாடு तमिलनाडु TAMILNADU

8 JUL 2023

DA 339858

T.Vir

M/s. Greenergy Pure Ethanol Private Ltd.
Bangalore.

-5-

And Whereas the VENDOR has offered to sell the Schedule mentioned property and the Purchaser has also accepted to buy the Schedule mentioned property for a net Sale Consideration of Rs.33,86,250/- (Rupees Thirty Three Lakhs Eighty Six Thousand and Two Hundred Fifty Only), free from all encumbrances, for which sum the VENDOR has also agreed to convey the Sale of Schedule mentioned Property, unto the Purchaser free from all encumbrances.

Whereas after deducting the TDS of 1% i.e., Rs.33,863/- from the above said amount,

PURCHASER

Greenergy Pure Ethanol Pvt Ltd

Director

VENDOR

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the VENDOR has received the entire Sale Consideration of the sum of Rs.33,52,388/- (Rupees Thirty Three Lakhs and Fifty Two Thousand Three Hundred Eighty Eight Only) from the Purchaser with full satisfaction by way of Demand Draft drawn on Union Bank of India, Bangalore Cantonment Branch, Bangalore vide D.D.No.837736 dated 10.07.2023.

NOW THIS DEED OF ABSOLUTE SALE WITNESSETH AS FOLLOWS:-

In pursuance of the above said mutually agreed terms and in consideration of the above said sum of Rs.33,52,388/- (Rupees Thirty Three Lakhs and Fifty Two Thousand Three Hundred Eighty Eight Only) already paid by the PURCHASER to the VENDOR as stated above, the VENDOR doth hereby sell, convey, grant, transfer and assign, by way of absolute sale to and in favor of the Purchaser herein the Sale Property which is more fully and particularly described in the schedule hereunder, together with all ways, waters, water courses, ditches easements, advantages, liberties, rights and privileges, and all other appurtenances whatsoever appertaining thereto, to have and to hold the same as absolute owner with all powers of alienation, .

THE VENDOR DOTH HEREBY FURTHER COVENANT WITH THE PURCHASER AS FOLLOWS:-

I) The VENDOR is the sole and absolute OWNER of the property hereby conveyed and that he has perfect right, title and interest to convey the said property to the Purchaser in the manner aforesaid and no other person has got any right, title and interest to convey the said property to the Purchaser in the manner aforesaid.

PURCHASER **VENDOR**

Greenergy Pure Ethanol Pvt Ltd

Director

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II) The VENDOR doth hereby declare that hereafter the VENDOR nor his heirs has got any manner of Right, Title or Interest over the property hereby sold. Even if anybody claims any such right, such claim shall be null and void.

III) The VENDOR doth hereby declare that there are no encumbrance, lien, trust, attachment, claim, charge, whatsoever which is subsisting on the said property and that the said property is not the subject matter of any litigation or proceedings and is not charged in favour of any Court, Revenue or other authority. If, However, there happen to be any encumbrances or litigation over the property and are disclosed at a later date, the VENDOR undertakes to clear them at his own cost and own motion and also shall compensate the Purchaser if any losses or expenses if any, the Purchaser may be put to, owing to the existence of such encumbrances and defects binding the VENDOR's other properties movable and immovable and also binding himself personally.

IV) The VENDOR doth hereby covenant with the Purchaser that the Purchaser shall and may at all times hereafter quietly and peacefully possess and enjoy the said property without any let or interruption or disturbances by the VENDOR or by any one claiming through him.

V) The VENDOR doth hereby covenant with the Purchaser that he and all persons lawfully and equitably claiming title will from time to time and at all times hereafter

PURCHASER **VENDOR**

Greenergy Fuels Ethanol Pvt Ltd

Director

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at the cost of the Purchaser execute and register all such acts, deeds and things for further and more perfectly assuring the title of the Purchaser in respect of the property hereby conveyed.

VI) The VENDOR doth hereby covenant with the Purchaser that he shall sign and execute any rectification at the expenses of purchaser that may be necessary in order to make this sale absolute

VII) The VENDOR doth hereby covenant with the Purchaser that he has, this day handed over to the Purchaser all documents and records pertaining to the title of the schedule mentioned property.

VIII) The VENDOR doth hereby declare that all taxes and other public charges payable in respect of the schedule mentioned property hereby conveyed has been paid up to this date and further covenant with the Purchaser that there are no arrears of tax payable to Government or local body.

IX) The VENDOR doth hereby declare and assure the Purchaser that he shall indemnify and shall keep indemnified the Purchaser against any loss or damage that the Purchaser may be put to by reason of any kind of encumbrance over the property.

X) The VENDOR hereby expressly declares that the sale of property mentioned in the schedule hereunder is not in violation of any law .

XI) The VENDOR doth hereby covenant with the Purchaser that he shall sign and execute any rectification at the expenses of purchaser that may be necessary in order to make this sale absolute.

PURCHASER **VENDOR**

Greenergy Pure Ethanol Pvt Ltd

Director

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XII) The VENDOR doth hereby covenant with the Purchaser that he shall also sign and execute any letter or form that may be required for the mutation of name in the revenue records and transfer of Patta in favour of the Purchaser or for such other purposes.

To this effect, the VENDOR has executed this Deed of Absolute Sale on the day, month and year first above mentioned in the presence of following witnesses.

SCHEDULE OF PROPERTY

Karur District, Karur Registration District, Kulithalai Sub-Registration District, Kulithalai Taluk,

1) Within the limits of Kumaramangalam Village, in Ayan Nanja Survey No.64/1 in Land measuring **Acre 0.21½ Cents** (equal to Hectare 0.08.75) which is western side out of Acre 0.43 Cents (equal to Hectare 0.17.5)

2) Within the limits of Kumaramangalam Village, in Ayan Nanja Survey No.64/2 in Land measuring **Acre 1.13¾ Cents** (equal to Hectare 0.46.00) which is western side out of Acre 2.26½ Cents which comes under the Total extent of Acre 7.41 Cents (equal to Hectare 3.00.0)

3) Within the limits of Kumaramangalam Village, in Ayan Nanja Survey No.64/2 in Land measuring **Acre 1.31 Cents** (equal to Hectare 0.53.0) which is western side out of Acre 3.20½ Cents which comes under the Total extent of Acre 7.41 Cents (equal to Hectare 3.00.0)

PURCHASER **VENDOR**

Greenergy Pure Ethanol Pvt Ltd

Director

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4) Within the limits of Kumaramangalam Village, in Ayan Nanja Survey No.64/2 in Land measuring **Acre 1.31 Cents** (equal to Hectare 0.53.00) which is western side out of Acre 3.20½ Cents which comes under the Total extent of Acre 7.41 Cents (equal to Hectare 3.00.0)

West by	:	Lands in Survey Nos.56 & 57
North by	:	Railway Line
East by	:	Lands belongs to Ananthi, W/o. Panneer Selvam
South by	:	Lands in Survey No.61

Within this Four boundaries, Total Extent of above said Lands in Item Nos.1, 2, 3 & 4 is **Acre 3.97¼ Cents**

5) Within the limits of Kumaramangalam Village, in Ayan Nanja Survey No.61

North by	:	Lands in Survey No.64/2
East by	:	Lands Belongs to Ananthi, W/o.Panneer Selvam
West by	:	Lands in Survey Nos.57 & 58
South by	:	Vadivu Canal

Within this Four boundaries, Land measuring **Acre 2.48½ Cents** (equal to Hectare 1.00.05) which is western side half share out of Acre 4.97 Cents (equal to Hectare 2.01.0)

6) Within the limits of Kumaramangalam Village, in Ayan Nanja Survey No.64/2

North by	:	Lands belongs to Panneer Selvam and others
South by	:	Lands in Survey No.61
East by	:	Lands belongs to P.Ananthi
West by	:	Lands in Survey No.57

PURCHASER **VENDOR**

Greenergy Pure Ethanol Pvt Ltd

Director

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Within this Four boundaries, Land measuring **Acre 0.31½ Cents** (equal to Hectare 0.12.75) which is western side half share out of Acre 0.63 Cents which comes under the Total extent of Acre 7.41 Cents (equal to Hectare 3.00.0).

Total Extent of above said Lands in Item Nos.1, 2, 3, 4, 5 & 6 is **Acre 6.77¼ Cents (Equal to Hectare 2.74.0)** together with the pathway, easement, canal and irrigation rights etc.,

The Property lies within the limits of Kulithalai Taluk and presently comprised in Survey Nos.64/1A, 64/2A & 61/1 of Kumaramangalam Village vide Patta Nos.1082, 1080 & 1084 respectively.

The Present market value of the Property is Rs.33,86,250/-.

PURCHASER **VENDOR**

Greenergy Pure Ethanol Pvt Ltd

Director

Witnesses:

1. **(Ananthi)**, W/o. Panneer Selvam),
No.333, Thirumurugan Nagar, Pettavaithalai,
Trichy -639112. (Id Aadhar No.9268 0649 1219)

2. **(S.Abdul Hakkim)**, S/o. A.Saifudeen Khan,
Door No.39A, Inamthar Thooppu, Tennur,
Trichy -620017. (Id Aadhar No.7703 9071 7434)



Drafted by:-

J.KAJA MOIDEEN,B.A.,M.L.,
Advocate, (Roll No.Ms3654/2010)
#71, 1st Floor, EVR Road,
Puthur, Trichy-620017.
Cell No. 99408-71076.

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DECLARATION

Proof / Affidavit that the property is not situated in water body area. (DECLARATION) (Judgment Delivered in Justice Order No.22163/2018)

We certify that the property identified in this document is not bounded by water bodies, waterways or catchment areas.

We also understand that we may be subject to legal action if we are may be subject to legal action if we are later found to have misrepresented or misrepresented them.

PURCHASER

Greenergy Pure Ethanol Pvt Ltd

Director

VENDOR

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R/Kullthalai/Book-1/2844/2023

CERTIFICATE UNDER SECTION 42 OF THE INDIAN STAMP ACT 1899

S.No 1880 of 2023

I hereby certify that a sum of ₹ 2,36,540/- (Rupees Two Lakh Thirty Six Thousand Five Hundred and Fourty only) on account of deficit stamp duty has been levied under section 41 of the Stamp Act in respect of this instrument from Mr. சையது ஃபகத் residing at 03, 4TH MAIN, JAYAMAHAL EXTENSION BENSON TOWN, BANGALORE NORTH, BANGALORE, Karnataka, India, 560046.

Sub Registrar: Kulithalai
Date: 12/07/2023

Signature of Sub Registrar and Collector under Section 41 of the Indian Stamp Act

Presented in the office of the Sub Registrar of Kulithalai and fee of ₹ 69,236/- paid at 04:28 PM on the 12/07/2023 by

Left Thumb 	Greenergy Pure Ethanol Pvt Ltd Director Additions as per recitals of document	
Execution admitted by Left Thumb 	Identity of the person verified through Consent based AADHAAR Authentication using Thumb Impression with UIDAI reference No. : UKC:56806168ab1eb034bb4d5db769a2e8c5b16a86 **(Details from UIDAI : Naveenkumar Panneerselvam S/O Panneerselvam, 24-07-1984, xxxxxxxx9936)**	
Claim admitted by Left Thumb 	Greenergy Pure Ethanol Pvt Ltd Director Identity of the person verified through Consent based AADHAAR Authentication using Thumb Impression with UIDAI reference No. UKC:837944a3e025840b6c4ad4a675f472bfd4a0c1 **(Details from UIDAI : Syed Fahad S/O: S M Kamal**	

Document No. 2844 of Book 1
Contains 2 Sheets 1 to 3 Sheet

1 / 2

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	Pasha, 14-06-1987, xxxxxxxx3773)	

12th day of July 2023

SURUTHI C
Sub Registrar
Kulithalai

Registered as Number **R/Kulithalai/Book-1/2844/2023.**

SURUTHI C
Sub Registrar

Date: 12/07/2023
Kulithalai

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தமிழக அரசு

வருவாய்த் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

மாவட்டம் : கரூர் வட்டம் : குளித்தலை

வருவாய் கிராமம் : குமாரமங்கலம் பட்டா எண் : 1082

உரிமையாளர்கள் பெயர்

1. பன்னீர்செல்வம் மகன் நவீன்குமார்

புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	
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				0 - 8.75	2.05			

குறிப்பு2 :

1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் https://eservices.tn.gov.in என்ற இணைய தளத்தில் 14/03/001/01082/30151 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 11-07-2023 அன்று 06:42:53 PM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின்2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

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Registering Officer

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தமிழக அரசு

வருவாய்த் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

மாவட்டம் : கரூர்

வட்டம் : குளித்தலை

வருவாய் கிராமம் : குமாரமங்கலம்

பட்டா எண் : 1080

உரிமையாளர்கள் பெயர்

1. பஞ்சுசெல்வம் மகன் நவின்குமார்

புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	
64	2A	--	--	1 - 52.00	35.67	--	--	2019/0105/14/025345-2019/14/03/000016SD -- 17-08-2019
				1 - 52.00	35.67			

குறிப்பு2 :

1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் https://eservices.tn.gov.in என்ற இணைய தளத்தில் 14/03/001/01080/30139 என்ற குறிப்பு எண்ணை உள்ளிடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 11-07-2023 அன்று 06:45:30 PM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின்2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

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Registering Officer

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தமிழக அரசு

வருவாய்த் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

மாவட்டம் : கரூர் வட்டம் : குளித்தலை

வருவாய் கிராமம் : குமாரமங்கலம் பட்டா எண் : 1084

உரிமையாளர்கள் பெயர்

1. பன்னீர்செல்வம் மகன் நவீன்குமார்

புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	
61	1	--	--	1 - 0.50	23.59	--	--	2019/0105/14/019204--2019/14/03/0000185D -- 20-08-2019
				1 - 0.50	23.59			

குறிப்பு2 :

1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் https://eservices.tn.gov.in என்ற இணைய தளத்தில் 14/03/001/01084/30173 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 11-07-2023 அன்று 06:38:17 PM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின்2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

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Registering Officer

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இந்திய அரசாங்கம்
Government of India
நவீன்குமார் பன்னீர்செல்வம்
Naveenkumar Panneerselvam
தந்தை : பன்னீர் செல்வம்
Father : PANEER SELVAM
பிறந்த நாள் / DOB : 24/07/1984
ஆண்பால் / Male
7661 1060 9936
எனது ஆதார், எனது அடையாளம்


ஆதார்
Unique Identification Authority of India
முகவரி:
S/O பன்னீர்செல்வம், 43/1, பூசாரி தோட்டம், சூளை, பெரியசேமூர், ரோடு, வீரப்பன்சத்திரம், தமிழ் நாடு, 638004
Address:
S/O Panneerselvam, 43/1, Poosari Thottam, Soolai, Periyasemur, Erode, Veerappanchatram, Tamil Nadu, 638004
7661 1060 9936
1947
help@uidai.gov.in
www.uidai.gov.in

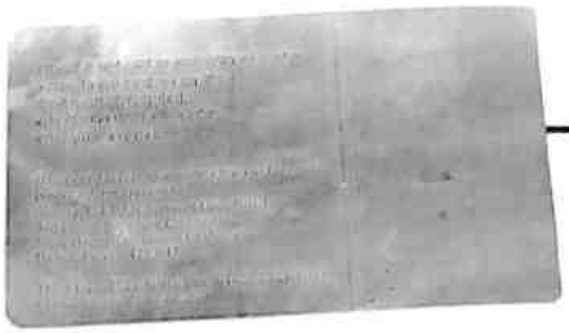
L

Praveen Kumar. P
SGHH310783

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Sheets 24 Sheet 18
Registering Officer

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L

T

Naveenkumar P

9944310485

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Registering Officer

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GOVERNMENT OF INDIA
MINISTRY OF CORPORATE AFFAIRS

Central Registration Centre

Certificate of Incorporation

[Pursuant to sub-section (2) of section 7 and sub-section (1) of section 8 of the Companies Act, 2013 (18 of 2013) and rule 18 of the Companies (Incorporation) Rules, 2014]

I hereby certify that GREENERGY PURE ETHANOL PRIVATE LIMITED is incorporated on this First day of July Two thousand twenty-two under the Companies Act, 2013 (18 of 2013) and that the company is limited by shares.

The Corporate Identity Number of the company is U24200KA2022PTC163272.

The Permanent Account Number (PAN) of the company is **AAJCG8851F** *

The Tax Deduction and Collection Account Number (TAN) of the company is **BLRG29460E** *

Given under my hand at Manesar this First day of July Two thousand twenty-two .

Digital Signature Certificate
SHIVARAJ C RANJERI
ASST. REGISTRAR OF COMPANIES
For and on behalf of the Jurisdictional Registrar of Companies
Registrar of Companies
Central Registration Centre

Disclaimer: This certificate only evidences incorporation of the company on the basis of documents and declarations of the applicant(s). This certificate is neither a license nor permission to conduct business or solicit deposits or funds from public. Permission of sector regulator is necessary wherever required. Registration status and other details of the company can be verified on www.mca.gov.in

Mailing Address as per record available in Registrar of Companies office:

GREENERGY PURE ETHANOL PRIVATE LIMITED
No.324, 1st Floor, Golden Point 4,, Vasnat Nagar, Bengaluru, Bangalore,
Karnataka, India, 560051

Greenergy Pure Ethanol Pvt Ltd

Director

* as issued by the Income Tax Department

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Registering Officer

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आयकर विभाग
INCOME TAX DEPARTMENT

भारत सरकार
GOVT. OF INDIA

ई– स्थायी लेखा संख्या कार्ड

e - Permanent Account Number (e-PAN) Card

AAJCG8851F

नाम / Name	GREENERGY PURE ETHANOL PRIVATE LIMITED
निगमन/गठन की तारीख Date of Incorporation / Formation	01/07/2022

Signature Not Verified

Digitally signed by Income Tax Dept
Date: 2022.07.11 [illegible] GMT+05:30

- ✓ Permanent Account Number (PAN) facilitate Income Tax Department linking of various documents, including payment of taxes, assessment, tax demand tax arrears, matching of information and easy maintenance & retrieval of electronic information etc. relating to a taxpayer.
स्थायी लेखा संख्या (पैन) एक करदाता से संबंधित विभिन्न दस्तावेजों को जोड़ने में आयकर विभाग को सहायक होता है, जिसमें करों के भुगतान, आकलन, कर मांग, टैक्स वसूली, सूचना के मिलान और इलेक्ट्रॉनिक जानकारी का आसान रखरखाव व बहाली आदि भी शामिल है।
- ✓ Quoting of PAN is now mandatory for several transactions specified under Income Tax Act, 1961 (Refer Rule 114B of Income Tax Rules, 1962)
आयकर अधिनियम, 1961 के तहत निर्दिष्ट कई लेनदेन के लिए स्थायी लेखा संख्या (पैन) का उद्धरण अब अनिवार्य है (आयकर नियम, 1962 के नियम 114B का संदर्भ लें)
- ✓ Possessing or using more than one PAN is against the law & may attract penalty of upto Rs. 10,000.
एक से अधिक स्थायी लेखा संख्या (पैन) का रखना या उपयोग करना, कानून के विरुद्ध है और इसके लिए 10,000 रुपये तक का दंड लगाया जा सकता है।
- ✓ The PAN Card enclosed contains Enhanced QR Code which is readable by a specific Android Mobile App. Keyword to search this specific Mobile App on Google Play Store is "Enhanced QR Code Reader for PAN Card.
संलग्न पैन कार्ड में एनहान्स क्यूआर कोड शामिल है जो एक विशिष्ट एंड्रॉइड मोबाइल ऐप द्वारा पठनीय है। Google Play Store पर इस विशिष्ट मोबाइल ऐप को खोजने के लिए कीवर्ड "Enhanced QR Code Reader for PAN Card" है।

Cut

आयकर विभाग
INCOME TAX DEPARTMENT

भारत सरकार
GOVT. OF INDIA

स्थायी लेखा संख्या कार्ड
Permanent Account Number Card

AAJCG8851F

नाम / Name
GREENERGY PURE ETHANOL PRIVATE LIMITED

निगमन/गठन की तारीख
Date of Incorporation/Formation
01/07/2022

इस कार्ड के खोने/मिले पर कृपया सूचित करें/लौटाएं:
आयकर पैन सेवा इकाई, एन एस डी एल
5 वी मंजिल, मंत्री स्टर्लिंग,
प्लॉट नं. 341, सर्वे नं. 997/8,
मॉडल कालोनी, दीप बंगला चौक के पास,
पुणे - 411 016.

If this card is lost / someone's lost card is found, please inform / return to :

Income Tax PAN Services Unit, NSDL
5th Floor, Mantri Sterling,
Plot No. 341, Survey No. 997/8,
Model Colony, Near Deep Bungalow Chowk,
Pune - 411 016.

Tel: 91-20-2721 8080, Fax: 91-20-2721 8081
e-mail: tininfo@nsdl.co.in

Electronically issued and Digitally signed ePAN is a valid mode of issue of Permanent Account Number (PAN) post amendments in law effective from the explanation to section (8) of Section 139A of Income Tax Act, 1961 and sub-rule (6) of Rule 114 of the Income Tax Rules, 1962. For more details, click here

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Registering Officer

Greenergy Pure Ethanol Pvt Ltd

Director

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ಭಾರತ ಸರ್ಕಾರ
Unique Identification Authority of India
Government of India

ನೋಂದಾವಣಿ ಕ್ರಮ ಸಂಖ್ಯೆ / Enrollment No.: 1208/71021/68359

To
ಸೈಯದ್ ಫಹಾದ್
Syed Fahad
S/O: S M Kamal Pasha
#03 4th main
Jayamahal extension
Bangalore North
Benson Town
Bangalore North Bangalore
Karnataka 560046
9900002752

02/10/2013
48412265
MN484122656FT

ನಿಮ್ಮ ಆಧಾರ್ ಸಂಖ್ಯೆ / Your Aadhaar No. :

8500 0227 3773

ಆಧಾರ್ - ಶ್ರೀಸಾಮಾನ್ಯನ ಅಧಿಕಾರ

ಭಾರತ ಸರ್ಕಾರ
Government of India



ಸೈಯದ್ ಫಹಾದ್
Syed Fahad
ಜನ್ಮ ದಿನಾಂಕ / DOB : 14/06/1987
ಪುರುಷ / Male

8500 0227 3773

ಆಧಾರ್ - ಶ್ರೀಸಾಮಾನ್ಯನ ಅಧಿಕಾರ

ಮಾಹಿತಿ

- ಆಧಾರ್ ಗುರುತಿನ ಪುರಾವೆಯೇ ಹೊರತು ಪೌರತ್ವದ್ದಲ್ಲ.
- ನಿಮ್ಮ ಗುರುತನ್ನು ಸಾಬೀತುಪಡಿಸಲು, ಆನ್ ಲೈನ್ ಮೂಲಕ ದೃಢೀಕರಿಸಿ.

INFORMATION

- Aadhaar is proof of identity, not of citizenship.
- To establish identity, authenticate online.

- ಆಧಾರ್ ದೇಶದಾದ್ಯಂತ ಮಾನ್ಯತೆಯನ್ನು ಪಡೆದಿದೆ.
- ಭವಿಷ್ಯದಲ್ಲಿ, ಸರ್ಕಾರಿ ಹಾಗೂ ಸರ್ಕಾರೇತರ ಸೇವೆಗಳನ್ನು ಪಡೆಯಲು ಆಧಾರ್ ನಿಮಗೆ ಸಹಾಯಕವಾಗಲಿದೆ.
- Aadhaar is valid throughout the country.
- Aadhaar will be helpful in availing Government and Non-Government services in future.

ಭಾರತೀಯ ವಿಶಿಷ್ಟ ಗುರುತು ಪ್ರಾಧಿಕಾರ
Unique Identification Authority of India

ವಿಳಾಸ:
S/O: ಎಸ್ ಎಮ್ ಕಮಲ್ ಪಶಾ #03, 4ನೇ ಮೇನ್, ಜಯಮಾಹಲ್ ಎಕ್ಸ್‌ಟೆನ್ಷನ್, ಬೆಂಗಳೂರು ಉತ್ತರ, ಬೆನ್ಸೊನ್ ಟೌನ್, ಬೆಂಗಳೂರು, ಬೆಂಗಳೂರು ಉತ್ತರ, ಕರ್ನಾಟಕ, 560046

Address:
S/O: S M Kamal Pasha, #03, 4th main, Jayamahal extension, Bangalore North, Benson Town, Bangalore, Bangalore North, Karnataka, 560046

8500 0227 3773

1947
1800 300 1947

help@uidai.gov.in

www
www.uidai.gov.in

Greenergy Pure Ethanol Pvt Ltd

Director

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Registering Officer

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ப. அனந்தி
9444876484

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Registering Officer

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भारत सरकार
GOVERNMENT OF INDIA

S Abdul Hakkim
பிறந்த வருடம் / Year of Birth : 1979
ஆண் / Male



7703 9071 7434

- சாதாரண மனிதனின் அதிகாரம்

இந்திய தனிப்பட்ட அடையாள ஆணையம்
UNIQUE IDENTIFICATION AUTHORITY OF INDIA

முகவரி:
S/O அ சைபுதீன் கான், 39அ,
இனாம்தர் தோப்பு,
தென்னூர், திருச்சிராப்பள்ளி,
தென்னூர், தமிழ்நாடு, 620017

Address:
S/O A Saifudeen Khan, 39A,
INAMTHAR THOOPU,
TENNUR, Tiruchirappalli,
Tennur, Tamil Nadu, 620017

1947
1800 180 1947

P.O. Box No. 1947,
Bengaluru 560 001

S. Abdul

9789332810

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1 Contains 24 Sheets 24 Sheet
Registering Officer

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2845 /2023

भारतीय गैर न्यायिक

एक सौ रुपये

Rs. 100

रु. 100

ONE HUNDRED RUPEES

सत्यमेव जयते

भारत INDIA

INDIA NON JUDICIAL

DA 339849

தமிழ்நாடு तमिलनाडु TAMILNADU 18 JUL 2023

M/s. Greenergy Pure ethanol Private Ltd,
Bangalore.

SALE DEED

This Deed of Absolute Sale made and executed at Kulithalai on this 12th day of July, 2023.

By

Mrs. ANANTHI, Wife of Panneer Selvam, aged 55 years, residing at Door No.333, THirumurugan Nagar, Pettavaithalai, Tiruchirappalli - 639112, Tamil Nadu (Id Aadhar No.9268 0649 1219 & PAN – CXBPA4533N) herein after called the 'VENDOR'.

VENDOR

PURCHASER

Greenergy Pure Ethanol Pvt Ltd

Director

Document No. 2845 of 2023 of Book 1 Contains 25 Sheets 1 Sheet

Registering Officer

Registering Officer

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தமிழ்நாடு तमिलनाडु TAMILNADU 18 JUL 2023

DA 339850

M/S. Greenergy Pure Ethanol Private Ltd.
Bangalore.



To and In-Favor of

M/s. GREENERGY PURE ETHANOL PRIVATE LIMITED, (PAN - AAJCG8851F) registered under the Companies Act vide CIN – U24200KA2022PTC163272 having Office at No.324, 1st Floor, Golden Point, 4, Vasant Nagar, Bangalore - 560051, State of Karnataka, represented by its Director, **Mr. SYED FAHAD,** S/o. S.M.Kamal Pasha, aged 36 years, residing at #03, 4th Main, Jayamahal Extension, Benson Town, Bangalore North, Bangalore – 560046, State of Karnataka. (Id Aadhar No. 8500 0227 3773) herein after called the' PURCHASER'

VENDOR

PURCHASER

Greenergy Pure Ethanol Pvt Ltd

Director

Document No. 2845 of 2023 of Book 1 Contains 25 Sheets 2 Sheet

Registering Officer

Registering Officer

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தமிழ்நாடு तमिलनाडु TAMILNADU 18 JUL 2023

DA 339851

T.Vid

M/s. Greenergy Pure Ethanol private ltd,
Bangalore.

The terms VENDOR and PURCHASER, wherever it may occur shall mean and include themselves, their heirs, legal representatives, executors, administrators and assigns.

THIS DEED OF SALE WITNESSETH AS FOLLOWS

Whereas the VENDOR is the sole, legal, true absolute and exclusive Owner of the property viz., **Lands in Survey Nos.64/1, 64/2 & 61 and presently comprised in Survey Nos.64/1B, 64/2B & 61/2 of Kumaramangalam Village Total Extent of Acre 6.04¾ Cents** which is more fully and particularly described in the schedule hereunder as Schedule I & II.

PURCHASER **VENDOR**

Greenergy Pure Ethanol Pvt

Director

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Registering Officer

Registering Officer

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தமிழ்நாடு तमिलनाडु TAMILNADU 18 JUL 2023

DA 339852

M/s. Greenergy Pure Ethanol private ltd,
Bangalore.

-4-

The VENDOR has purchased the Schedule I of the schedule mentioned property from and out of his self acquired funds and her name from Mr.Arunachalam on 07.04.2004 under a Registered Sale Deed bearing **Document No.526/2004** in Book 1 on the file of the Sub Registrar Office, Kulithalai, Karur District and the VENDOR has purchased the Schedule II of the schedule mentioned property from and out of his self acquired funds and her name from Mrs.Vijayalakshmi on 19.04.2004 under a Registered Sale Deed bearing **Document No.664/2004** in Book 1 on the file of the Sub Registrar Office, Kulithalai, Karur District.

VENDOR

PURCHASER

Greenergy Pure Ethanol Pvt Ltd

Director

Document No. 2845 of 2023 of Book 1 Contains 25 Sheets 4 Sheet

Registering Officer

Registering Officer

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தமிழ்நாடு तमिलनाडु TAMILNADU 08 JUL 2023

DA 339853

M/s. Greenergy Pure Ethanol Private Ltd.,
Bangalore.

Ever since the VENDOR has been in continuous, uninterrupted peaceful possession and enjoyment of the said property, with full powers of alienation, without any let or hindrances, paying all taxes and outgoing payable to the Government and Local Authorities and has got valid and marketable title to the said property.

And Whereas the VENDOR has offered to sell the Schedule mentioned property and the Purchaser has also accepted to buy the Schedule mentioned property for a net Sale Consideration of Rs.30,23,750/- (Rupees Thirty Lakhs Twenty Three Thousand and Seven Hundred Fifty Only),

VENDOR

PURCHASER

Greenergy Pure Ethanol Pvt Ltd

Director

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Registering Officer

Registering Officer

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free from all encumbrances, for which sum the VENDOR has also agreed to convey the Sale of Schedule mentioned Property, unto the Purchaser free from all encumbrances.

Whereas after deducting the TDS of 1% i.e., Rs.30,238/- from the above said amount, the VENDOR has received the entire Sale Consideration of the sum of Rs.29,93,512/- (Rupees Twenty Nine Lakhs Ninety Three Thousand and Five Hundred Twelve Only) from the Purchaser with full satisfaction by way of Demand Draft drawn on Union Bank of India, Bangalore Cantonment Branch, Bangalore vide D.D.No.837735 dated 10.07.2023.

NOW THIS DEED OF ABSOLUTE SALE WITNESSETH AS FOLLOWS:-

In pursuance of the above said mutually agreed terms and in consideration of the above said sum of Rs.29,93,512/- (Rupees Twenty Nine Lakhs Ninety Three Thousand and Five Hundred Twelve Only) already paid by the PURCHASER to the VENDOR as stated above, the VENDOR doth hereby sell, convey, grant, transfer and assign, by way of absolute sale to and in favour of the Purchaser herein the Sale Property which is more fully and particularly described in the schedule hereunder, together with all ways, waters, water courses, ditches easements, advantages, liberties, rights and privileges, and all other appurtenances whatsoever appertaining thereto, to have and to hold the same as absolute owner with all powers of alienation, .

THE VENDOR DOTH HEREBY FURTHER COVENANT WITH THE PURCHASER AS FOLLOWS:-

VENDOR

PURCHASER

Greenergy Pure Ethanol Pvt Ltd

Director

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Registering Officer

Registering Officer

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I) The VENDOR is the sole and absolute OWNER of the property hereby conveyed and that he has perfect right, title and interest to convey the said property to the Purchaser in the manner aforesaid and no other person has got any right, title and interest to convey the said property to the Purchaser in the manner aforesaid.

II) The VENDOR doth hereby declare that hereafter the VENDOR nor his heirs has got any manner of Right, Title or Interest over the property hereby sold. Even if anybody claims any such right, such claim shall be null and void.

III) The VENDOR doth hereby declare that there are no encumbrance, lien, trust, attachment, claim, charge, whatsoever which is subsisting on the said property and that the said property is not the subject matter of any litigation or proceedings and is not charged in favour of any Court, Revenue or other authority. If, However, there happen to be any encumbrances or litigation over the property and are disclosed at a later date, the VENDOR undertakes to clear them at his own cost and own motion and also shall compensate the Purchaser if any losses or expenses if any, the Purchaser may be put to, owing to the existence of such encumbrances and defects binding the VENDOR's other properties movable and immovable and also binding himself personally.

IV) The VENDOR doth hereby covenant with the Purchaser that the Purchaser shall and may at all times hereafter quietly and peacefully possess and enjoy the said property without any let or interruption or disturbances by the VENDOR or by any one claiming through him.

PURCHASER

Greenergy Pure Ethanol Pvt Ltd.

Director

VENDOR

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Registering Officer

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V) The VENDOR doth hereby covenant with the Purchaser that he and all persons lawfully and equitably claiming title will from time to time and at all times hereafter at the cost of the Purchaser execute and register all such acts, deeds and things for further and more perfectly assuring the title of the Purchaser in respect of the property hereby conveyed.

VI) The VENDOR doth hereby covenant with the Purchaser that he shall sign and execute any rectification at the expenses of purchaser that may be necessary in order to make this sale absolute

VII) The VENDOR doth hereby covenant with the Purchaser that he has, this day handed over to the Purchaser all documents and records pertaining to the title of the schedule mentioned property.

VIII) The VENDOR doth hereby declare that all taxes and other public charges payable in respect of the schedule mentioned property hereby conveyed has been paid up to this date and further covenant with the Purchaser that there are no arrears of tax payable to Government or local body.

IX) The VENDOR doth hereby declare and assure the Purchaser that he shall indemnify and shall keep indemnified the Purchaser against any loss or damage that the Purchaser may be put to by reason of any kind of encumbrance over the property.

X) The VENDOR hereby expressly declares that the sale of property mentioned in the schedule hereunder is not in violation of any law .

VENDOR

PURCHASER

Greenergy Pure Ethanol Pvt Ltd

Director

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XI) The VENDOR doth hereby covenant with the Purchaser that he shall sign and execute any rectification at the expenses of purchaser that may be necessary in order to make this sale absolute

XII) The VENDOR doth hereby covenant with the Purchaser that he shall also sign and execute any letter or form that may be required for the mutation of name in the revenue records and transfer of Patta in favour of the Purchaser or for such other purposes.

To this effect, the VENDOR has executed this Deed of Absolute Sale on the day, month and year first above mentioned in the presence of following witnesses.

SCHEDULE OF PROPERTY

Schedule - I

Karur District, Karur Registration District, Kulithalai Sub-Registration District, Kulithalai Taluk,

1) Within the limits of Kumaramangalam Village, in Ayan Nanja Survey No.64/1 in Land measuring **Acre 0.21½ Cents** which is eastern side half share out of Acre 0.43 Cents (equal to Hectare 0.17.5)

2) Within the limits of Kumaramangalam Village, in Ayan Nanja Survey No.64/2 in Land measuring **Acre 1.13¾ Cents** which is eastern-side out of Acre 2.26½ Cents comes under the Acre 7.41 Cents (equal to Hectare 3.00.0)

VENDOR

ப. அனைத்தி

PURCHASER

Greenergy Pure Ethanol Pvt Ltd

Director

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3) Within the limits of Kumaramangalam Village, in Ayan Nanja Survey No.64/2 in Land measuring **Acre 1.89½ Cents** which is eastern-side land out of Acre 3.20½ Cents comes under the Acre 7.41 Cents (equal to Hectare 3.00.0)

North by : Railway Road
East by : Lands belongs to Subbammal
South by : Lands belongs to Vijayalakshmi
West by : Lands Purchased by Jothimani and others from Arunachalam

Within this Four boundaries, Total Extent of above said Lands in Item Nos.1, 2 & 3 is **Acre 3.24¾ Cents**

4) Within the limits of Kumaramangalam Village, in Ayan Nanja Survey No.61 in Land measuring **Acre 2.48½ Cents** which is eastern side Half share out of Acre 4.97 Cents (equal to Hectare 2.01.0)

North by : Lands belongs to Vijayalakshmi
East by : Lands belongs to Vadivambal
South by : Kanni Canal
West by : Lands purchased by Jothimani from Arunachalam

Within this Four Boundaries, Total Extent of **Acre 2.48½ Cents**

Total Extent of above said Lands in Item Nos.1, 2, 3 & 4 is **Acre 5.73¼ Cents** together with the pathway, easement, canal and irrigation rights etc.,

VENDOR

V. ஜோதி

PURCHASER

Greenergy Pure Ethanol Pvt Ltd

Director

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Registering Officer

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Schedule - II

Karur District, Karur Registration District, Kulithalai Sub-Registration District, Kulithalai Taluk, Within the limits of Kumaramangalam Village, in Ayan Nanja Survey No.64/2 in Land measuring **Acre 0.31½ Cents** which is eastern side Half Share out of Acre 0.63 Cents comes under the Acre 7.41 Cents (equal to Hectare 3.00.0)

South by	:	Lands belongs to Anandi
North by	:	Lands belongs to Anandhi
West by	:	Lands purchased by L.Joyhimani
East by	:	Lands Purchased by Minor.Ganesh through his Guardian Ponnammal

Within this Four boundaries, Total Extent **Acre 0.31½ Cents** together with the pathway, easement, canal and irrigation rights etc.,

Total Extent of Lands in above said Schedule I & II is **Acre 6.04¾ Cents** together with Bore-well and Electricity Service Vide Connection No.06-228-003-612.

The Property lies within the limits of Kulithalai Taluk and presently comprised in Survey Nos.64/1B, 64/2B & 61/2 of Kumaramangalam Village vide Patta Nos.1083, 1081 & 209 respectively.

PURCHASER

VENDOR

Greenergy Pure Ethanol Pvt Ltd

Director

Document No. 2845 of 2023 of Book 1 Contains 25 Sheets 11. Sheet

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The Present market value of the Property is Rs.30,23,750/-.

PURCHASER

VENDOR

Greenergy Pure Ethanol Pvt Ltd

Director

Witnesses:

1. **(P.Naveen Kumar)**, S/o. Panneer Selvam,
Door No.43/1, Poosari Thottam, Soolai,
Veerappanchatram, Periyasemur,
Erode -638004. (Id Aadhar No.7661 1060 9936)

2. **(S.Abdul Hakkim)**, S/o. A.Saifudeen Khan,
Door No.39A, Inamthar Thooppu, Tennur,
Trichy - 620017.
(Id Aadhar No.7703 9071 7434)



Drafted by:-

J.KAJA MOIDEEN,B.A.,M.L.,
Advocate, (Roll No.Ms3654/2010)
#71, 1st Floor, EVR Road,
Puthur, Trichy-620017.
Cell No. 99408-71076.

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Contains 25 Sheets 12 Sheet

Registering Officer

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DECLARATION

Proof / Affidavit that the property is not situated in water body area. (DECLARATION) (Judgment Delivered in Justice Order No.22163/2018)

We certify that the property identified in this document is not bounded by water bodies, waterways or catchment areas.

We also understand that we may be subject to legal action if we are may be subject to legal action if we are later found to have misrepresented or misrepresented them.

PURCHASER

Greenergy Pure Ethanol Pvt Ltd

Director

VENDOR

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Registering Officer

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CERTIFICATE UNDER SECTION 42 OF THE INDIAN STAMP ACT 1899

S.No 1881 of 2023

I hereby certify that a sum of ₹ 2,11,165/- (Rupees Two Lakh Eleven Thousand One Hundred and Sixty Five only) on account of deficit stamp duty has been levied under section 41 of the Stamp Act in respect of this instrument from Mr. சையது ஃபகத் residing at 03, 4TH MAIN, JAYAMAHAL EXTENSION BENSON TOWN, BANGALORE NORTH, BANGALORE, Karnataka, India, 560046.

Sub Registrar: Kulithalai
Date: 12/07/2023

Signature of Sub Registrar and Collector under Section 41 of the Indian Stamp Act

Presented in the office of the Sub Registrar of Kulithalai and fee of ₹ 62,086/- paid at 04:36 PM on the 12/07/2023 by

Left Thumb





Greenergy Pure Ethanol Pvt Ltd

Director

Additions as per recitals of document

Execution admitted by

Left Thumb





Identity of the person verified through Consent based AADHAAR Authentication using Thumb Impression with UIDAI reference No. : UKC:49799667860e0eec944b44a508f0ee57a8a7ec (Details from UIDAI : Ananthi Pannirselvam , 20-08-1967, xxxxxxxx1219)



Claim admitted by

Left Thumb





Greenergy Pure Ethanol Pvt Ltd

Director

Identity of the person verified through Consent based AADHAAR Authentication using Thumb Impression with UIDAI reference No. : UKC:03014[illegible]0d4bd0447be6e9c87d8be0a7f1e (Details from UIDAI : Syed Fahad S/O: S M Kamal



Registering Officer

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	Pasha, 14-06-1987, xxxxxxxx3773)	

12th day of July 2023

SURUTHI C
Sub Registrar
Kulithalai

Registered as Number **R/Kulithalai/Book-1/2845/2023.**

Date: 12/07/2023
Kulithalai

SURUTHI C
Sub Registrar

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Registering Officer

2 / 2

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தமிழக அரசு

வருவாய்த் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

மாவட்டம் : கரூர்

வட்டம் : குளித்தலை

வருவாய் கிராமம் : குமாரமங்கலம்

பட்டா எண் : 1083

உரிமையாளர்கள் பெயர்

1. பன்னீர்செல்வம்

மனைவி ஆனந்தி

புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	
64	1B	--	--	0 - 8.75	2.05	--	--	2019/0105/14/025346--2019/14/03/000017SD -- 17-08-2019
				0 - 8.75	2.05			

குறிப்பு2 :

1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் https://eservices.tn.gov.in என்ற இணைய தளத்தில் 14/03/001/01083/30162 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 11-07-2023 அன்று 06:35:30 PM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின்2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

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Registering Officer

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தமிழக அரசு

வருவாய்த் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

மாவட்டம் : கரூர்

வட்டம் : குளித்தலை

வருவாய் கிராமம் : குமாரமங்கலம்

பட்டா எண் : 1081

உரிமையாளர்கள் பெயர்

1. பன்னீர்செல்வம் மனைவி ஆனந்தி

புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	
64	2B	--	--	1 - 48.00	34.74	--	--	2019/0105/14/025345--2019/14/03/000016SD -- 17-08-2019
				1 - 48.00	34.74			

குறிப்பு2 :

1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் https://eservices.tn.gov.in என்ற இணைய தளத்தில் 14/03/001/01081/30140 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 11-07-2023 அன்று 06:36:41 PM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின்2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

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Registering Officer

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தமிழக அரசு

வருவாய்த் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

மாவட்டம் : கரூர்

வட்டம் : குளித்தலை

வருவாய் கிராமம் : குமாரமங்கலம்

பட்டா எண் : 209

உரிமையாளர்கள் பெயர்

1. பன்னீர்செல்வம்

மனைவி ஆனந்தி

புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக் - ஏர்	ரு - பை	ஹெக் - ஏர்	ரு - பை	ஹெக் - ஏர்	ரு - பை	
61	2	--	--	1 - 0.50	23.59	--	--	2019/0105/14/019204--2019/14/03/000018SD -- 20-08-2019
				1 - 0.50	23.59			

குறிப்பு2 :

1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் https://eservices.tn.gov.in என்ற இணைய தளத்தில் 14/03/001/00209/40121 என்ற குறிப்பு எண்ணை உள்ளிடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 11-07-2023 அன்று 06:41:24 PM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின்2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

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இந்திய அரசாங்கம்
Government of India



ஆனந்தி பன்னீர்செல்வம்
Ananthi Panniselvam
பிறந்த நாள்/DOB: 20/08/1967
பெண்/ FEMALE

9268 0649 1219
VID : 9128 3886 5390 4121

எனது ஆதார், எனது அடையாளம்

ஆதார்
Unique Identification Authority of India

முகவரி:
333, -, திருமுருகன நகர், பெட்டவாய்தலை,
திருச்சிராப்பள்ளி,
தமிழ்நாடு - 639112

Address:
333, -, THIRUMURUGAN NAGAR,
Pettavathalai, Tiruchirappalli,
Tamil Nadu - 639112

9268 0649 1219
VID : 9128 3886 5390 4121

V. ஆனந்தி

9444876484

Document No. 2845 of 2023 of Book 1
Contains 25 Sheets 19 Sheet

Registering Officer

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आयकर विभाग
INCOME TAX DEPARTMENT

भारत सरकार
GOVT. OF INDIA



स्थायी लेखा संख्या कार्ड
Permanent Account Number Card

CXBPA4533N

नाम / Name
ANANTHI

पिता का नाम / Father's Name
MANI

जन्म की तारीख / Date of Birth
20/06/1967

P. Ananthi

हस्ताक्षर / Signature

28072015

इस कार्ड के खोने/पाने पर कृपया सूचित करें/लौटाएं:
आयकर पैन सेवा इकाई, एन एस डी एल
5 वी मंजिल, मंत्री स्टर्लिंग,
प्लॉट नं. 341, सर्वे नं. 997/8,
मॉडल कालोनी, दीप बंगला चौक के पास,
पुणे - 411 016.

If this card is lost / someone's lost card is found, please inform / return to :
Income Tax PAN Services Unit, NSDL
5th Floor, Mantri Sterling,
Plot No. 341, Survey No. 997/8,
Model Colony, Near Deep Bungalow Chowk,
Pune - 411 016.
Tel: 91-20-2721 8050, Fax: 91-20-2721 8051
e-mail: tininfo@nsdl.co.in

भारत सरकार

ப. அனந்தி

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Registering Officer

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Naveenkumar. P
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भारत सरकार
GOVERNMENT OF INDIA

எஸ் அப்துல் ஹக்கீம்
S Abdul Hakkim
பிறந்த வருடம் / Year of Birth : 1979
ஆண் / Male



7703 9071 7434

- சாதாரண மனிதனின் அதிகாரம்

இந்திய தனிப்பட்ட அடையாள ஆணையமைப்பு
UNIQUE IDENTIFICATION AUTHORITY OF INDIA

முகவரி:
S/O அ சைபுதீன் கான், 39எ,
இனாம்தார் தோப்பு,
தென்னூர், திருச்சிராப்பள்ளி,
தென்னூர், தமிழ்நாடு, 620017

Address:
S/O A Saifudeen Khan, 39A,
INAMTHAR THOOPU,
TENNUR, Tiruchirappalli,
Tennur, Tamil Nadu, 620017

1947
1800 180 1947

help@uidai.gov.in

www.uidai.gov.in

P.O. Box No.1947,
Bengaluru-560 001

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Document No. 2845 of 2023 of Book
1 Contains 25 Sheets 22 Sheet

Registering Officer

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GOVERNMENT OF INDIA
MINISTRY OF CORPORATE AFFAIRS
Central Registration Centre

Certificate of Incorporation

[Pursuant to sub-section (2) of section 7 and sub-section (1) of section 8 of the Companies Act, 2013 (18 of 2013) and rule 18 of the Companies (Incorporation) Rules, 2014]

I hereby certify that GREENERGY PURE ETHANOL PRIVATE LIMITED is incorporated on this First day of July Two thousand twenty-two under the Companies Act, 2013 (18 of 2013) and that the company is limited by shares.

The Corporate Identity Number of the company is U24200KA2022PTC163272.

The Permanent Account Number (PAN) of the company is **AAJCG8851F** *

The Tax Deduction and Collection Account Number (TAN) of the company is **BLRG29460E** *

Given under my hand at Manesar this First day of July Two thousand twenty-two .

Digital Signature Certificate
SHIVARAJ C RANJERI
ASST. REGISTRAR OF COMPANIES
For and on behalf of the Jurisdictional Registrar of Companies
Registrar of Companies
Central Registration Centre

Disclaimer: This certificate only evidences incorporation of the company on the basis of documents and declarations of the applicant(s). This certificate is neither a license nor permission to conduct business or solicit deposits or funds from public. Permission of sector regulator is necessary wherever required. Registration status and other details of the company can be verified on www.mca.gov.in

Mailing Address as per record available in Registrar of Companies office:

GREENERGY PURE ETHANOL PRIVATE LIMITED
No.324, 1st Floor, Golden Point 4,, Vasnat Nagar, Bengaluru, Bangalore,
Karnataka, India, 560051

* as issued by the Income Tax Department

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Registering Officer

Greenergy Pure Ethanol Pvt Ltd

Director

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आयकर विभाग
INCOME TAX DEPARTMENT

भारत सरकार
GOVT. OF INDIA

ई– स्थायी लेखा संख्या कार्ड
e - Permanent Account Number (e-PAN) Card

AAJCG8851F

नाम / Name	GREENERGY PURE ETHANOL PRIVATE LIMITED
निगमन/गठन की तारीख Date of Incorporation / Formation	01/07/2022

Signature Not Verified
Digitally signed by Income Tax Deptt
Date: 2022.07.11 17:37:10 GMT+05:30

- ✓ Permanent Account Number (PAN) facilitate Income Tax Department linking of various documents, including payment of taxes, assessment, tax demand tax arrears, matching of information and easy maintenance & retrieval of electronic information etc. relating to a taxpayer.
  स्थायी लेखा संख्या (पैन) एक करदाता से संबंधित विभिन्न दस्तावेजों को जोड़ने में आयकर विभाग को सहायक होता है, जिसमें करों के भुगतान, आकलन, कर मांग, टैक्स बकाया, सूचना के मिलान और इलेक्ट्रॉनिक जानकारी का आसान रखरखाव व बहाली आदि भी शामिल है।
- ✓ Quoting of PAN is now mandatory for several transactions specified under Income Tax Act, 1961 (Refer Rule 114B of Income Tax Rules, 1962)
  आयकर अधिनियम, 1961 के तहत निर्दिष्ट कई लेनदेन के लिए स्थायी लेखा संख्या (पैन) का उल्लेख अब अनिवार्य है (आयकर नियम, 1962 के नियम 114B, का संदर्भ लें)
- ✓ Possessing or using more than one PAN is against the law & may attract penalty of upto Rs. 10,000.
  एक से अधिक स्थायी लेखा संख्या (पैन) का रखना या उपयोग करना, कानून के विरुद्ध है और इसके लिए 10,000 रुपये तक का दंड लगाया जा सकता है।
- ✓ The PAN Card enclosed contains Enhanced QR Code which is readable by a specific Android Mobile App. Keyword to search this specific Mobile App on Google Play Store is "Enhanced QR Code Reader for PAN Card.
  संलग्न पैन कार्ड में एनहान्स्ड क्यूआर कोड शामिल है जो एक विशिष्ट एंड्रॉइड मोबाइल ऐप द्वारा पठनीय है। Google Play Store पर इस विशिष्ट मोबाइल ऐप को खोजने के लिए कीवर्ड "Enhanced QR Code Reader for PAN Card" है।

Cut

आयकर विभाग
INCOME TAX DEPARTMENT

भारत सरकार
GOVT. OF INDIA

स्थायी लेखा संख्या कार्ड
Permanent Account Number Card

AAJCG8851F

नाम / Name
GREENERGY PURE ETHANOL PRIVATE LIMITED

निगमन/गठन की तारीख
Date of Incorporation/Formation
01/07/2022

Fold

इस कार्ड के खोने/पाने पर कृपया सूचित करें/लौटाएं:
आयकर पैन सेवा इकाई, एन एस डी एल
5 वी मंजिल, मंत्री स्टर्लिंग,
प्लॉट नं. 341, सर्वे नं. 997/8,
मॉडल कालोनी, दीप बंगला चौक के पास,
पुणे - 411 016.

If this card is lost / someone's lost card is found, please inform / return to :

Income Tax PAN Services Unit, NSDL
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Plot No. 341, Survey No. 997/8,
Model Colony, Near Deep Bungalow Chowk,
Pune - 411 016.

Tel: 91-20-2721 8080, Fax: 91-20-2721 8081
e-mail: tininfo@nsdl.co.in

Electronically issued and Digitally signed ePAN is a valid mode of issue of Permanent Account Number (PAN) post amendments in clause (c) in the Explanation occurring after sub-section (8) of Section 139A of Income Tax Act, 1961 and sub-rule (6) of Rule 114 of the Income Tax Rules, 1962. For more details, click here

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Registering Officer

Greenergy Pure Ethanol Pvt Ltd

Director

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ಭಾರತ ಸರ್ಕಾರ
Unique Identification Authority of India
Government of India

ನೋಂದಾವಣಿ ಕ್ರಮ ಸಂಖ್ಯೆ / Enrollment No.: 1200/71021/88359

To
ಸೈಯದ್ ಫಹಾದ್
Syed Fahad
S/O: S M Kamal Pasha
#03 4th main
Jayamahal extension
Bangalore North
Benson Town
Bangalore North Bangalore
Karnataka 560046
9900002752

02/10/2013
48412255
MN484122656FT

ನಿಮ್ಮ ಆಧಾರ್ ಸಂಖ್ಯೆ / Your Aadhaar No. :

8500 0227 3773

ಆಧಾರ್ - ಶ್ರೀಸಾಮಾನ್ಯನ ಅಧಿಕಾರ

ಭಾರತ ಸರ್ಕಾರ
Government of India



ಸೈಯದ್ ಫಹಾದ್
Syed Fahad
ಜನ್ಮ ದಿನಾಂಕ / DOB : 14/08/1987
ಪುರುಷ / Male

8500 0227 3773

ಆಧಾರ್ - ಶ್ರೀಸಾಮಾನ್ಯನ ಅಧಿಕಾರ

AADHAAR

ಮಾಹಿತಿ

- ಆಧಾರ್ ಗುರುತಿನ ಪುರಾವೆಯೇ ಹೊರತು ಪೌರತ್ವದ್ದಲ್ಲ .
- ನಿಮ್ಮ ಗುರುತನ್ನು ಸಾಬೀತುಪಡಿಸಲು, ಆನ್ ಲೈನ್ ಮೂಲಕ ದೃಢೀಕರಿಸಿ .

INFORMATION

- Aadhaar is proof of identity, not of citizenship .
- To establish identity, authenticate online .

- ಆಧಾರ್ ದೇಶದಾದ್ಯಂತ ಮಾನ್ಯತೆಯನ್ನು ಪಡೆದಿದೆ .
- ಭವಿಷ್ಯದಲ್ಲಿ, ಸರ್ಕಾರಿ ಹಾಗೂ ಸರ್ಕಾರೇತರ ಸೇವೆಗಳನ್ನು ಪಡೆಯಲು ಆಧಾರ್ ನಿಮಗೆ ಸಹಾಯಕವಾಗಲಿದೆ .
- Aadhaar is valid throughout the country .
- Aadhaar will be helpful in availing Government and Non-Government services in future .

ಭಾರತೀಯ ವಿಶಿಷ್ಟ ಗುರುತು ಪ್ರಾಧಿಕಾರ
Unique Identification Authority of India

ವಿಳಾಸ:
S/O: ಎಸ್ ಎಮ್ ಕಮಲ್ ಪಶಾ #03, 4ನೇ ಮೇನ್, ಜಯಮಾಹಲ್ ಎಕ್ಸ್‌ಟೆನ್ಷನ್, ಬೆಂಗಳೂರು ಉತ್ತರ, ಬೆನ್ಸೊನ್ ಟೌನ್, ಬೆಂಗಳೂರು, ಬೆಂಗಳೂರು ಉತ್ತರ, ಕರ್ನಾಟಕ, 560046

Address:
S/O: S M Kamal Pasha, #03, 4th main, Jayamahal extension, Bangalore North, Benson Town, Bangalore, Bangalore North, Karnataka, 560046

8500 0227 3773

1947
1800 300 1947

help@uidai.gov.in

www.uidai.gov.in

Greenergy Pure Ethanol Pvt Ltd

Director

Document No. 2845 of 2023 Book 1
Contains 25 Sheets 25 Sheet

Registering Officer

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790/2024

भारतीय गैर न्यायिक

एक सौ रुपये

Rs. 100

रु. 100

ONE HUNDRED RUPEES

सत्यमेव जयते

भारत INDIA

INDIA NON JUDICIAL

தமிழ்நாடு तमिलनाडु TAMILNADU 16 FEB 2024

DW 568446

M/s. Greenergy Pure Ethanol Pvt. Ltd., Bangalore.

அ. ஷம்ஷாத், மு.வி
தொழிலாளர் நீதி மன்றம்
மாவட்ட நீதி மன்ற வளாகம்
எண்: 2/2000, திருச்சி
செல் எண்: 93451 61811

SALE DEED

This Deed of Absolute Sale made and executed at Kulithalai on this 26th day of February, 2024.

Mrs. Aarthi, W/o. Naveen Kumar, residing at No.43/1, Poosari Thottam, Periya Semur, Veerappan Chatram, Erode Taluk & District, **(Aadhar No.7362 6659 1826 & PAN No.ARTPA0538K)** herein after called the 'VENDOR'.

VENDOR

S. Aarthi

PURCHASER
For M/s.Greenergy Pure Ethanol Private Limited

Authorised

Manager/Authorized Signatory

Document No. 790 of 2024 of Book 1 Contains 19 Sheets 1 Sheet

Registering Officer

To and In-Favor of **M/s.GREENERGY PURE ETHANOL PRIVATE LIMITED, (PAN - AAJCG8851F)** registered under the Companies Act vide CIN - U24200KA2022PTC163272, having Office at No.324, 1st Floor, Golden Point, 4, Vasant Nagar, Bangalore - 560051, State of Karnataka, represented by its Manager/Authorized Signatory, **Mr. Thota Kiran Kumar,** S/o. Naga Venkata Siva Sai Gangathara Rao, (Id Aadhar No.4285 8191 7541) authorized under Board Resolution dated 05.02.2024 by M/s. Greenergy Pure Ethanol Private Limited, herein after called the' PURCHASER'

The terms VENDOR and PURCHASER, wherever it may occur shall mean and include themselves, their heirs, legal representatives, executors, administrators and assigns.

This Deed of Sale Witnesseth as follows

Whereas the VENDOR is the sole, legal, true absolute and exclusive Owner of the property viz., **Lands in Survey Nos.63, 65/2 & 65/3 presently comprised in New Survey Nos. 63/2, 65/2 & 65/3B of Kumaramangalam Village Total Extent of Acre 5.60 Cents** which is more fully and particularly described in the schedule hereunder, which he has purchased from and out of his own funds and his name from Nethaji Manian on 24.01.2019 under a Registered Sale Deed bearing **Document No.158/2019** in Book 1 on the file of the Sub Registrar Office, Kulithalai, Karur District.

Ever since the VENDOR has been in continuous, uninterrupted peaceful possession and enjoyment of the said property, with full powers of alienation, without any let or hindrances, paying all taxes and outgoing payable to the Government and Local Authorities and has got valid and marketable title to the said property.

And Whereas the VENDOR has offered to sell the Schedule mentioned property and the Purchaser has also accepted to buy the Schedule mentioned property

PURCHASER **VENDOR**

For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

Document No. 790 of 2024 of Book 1 Contains 19 Sheets 2 Sheet

Registering Officer

For a net Sale Consideration of Rs.84,00,000/- (Rupees Eighty Four Lakhs Only), free from all encumbrances, for which sum the VENDOR has also agreed to convey the Sale of Schedule mentioned Property, unto the Purchaser free from all encumbrances.

Whereas after deducting the TDS of 1% i.e., Rs.84,000/- from the above said amount, the VENDOR has received the entire Sale Consideration of the sum of Rs.83,16,000/- (Rupees Eighty Three Lakhs and Sixteen Thousand Only) from the Purchaser with full satisfaction by way of Demand Draft drawn on Union Bank of India, Bangalore Cantonment Branch, Bangalore vide D.D.No.961836 dated 23.02.2024.

NOW THIS DEED OF ABSOLUTE SALE WITNESSETH AS FOLLOWS:-

In pursuance of the above said mutually agreed terms and in consideration of the above said sum of Rs.83,16,000/- (Rupees Eighty Three Lakhs and Sixteen Thousand Only) already paid by the PURCHASER to the VENDOR as stated above, the VENDOR doth hereby sell, convey, grant, transfer and assign, by way of absolute sale to and in favor of the Purchaser herein the Sale Property which is more fully and particularly described in the schedule hereunder, together with all ways, waters, water courses, ditches easements, advantages, liberties, rights and privileges, and all other appurtenances whatsoever appertaining thereto, to have and to hold the same as absolute owner with all powers of alienation,

THE VENDOR DOTH HEREBY FURTHER COVENANT WITH THE PURCHASER AS FOLLOWS:-

I) The VENDOR is the sole and absolute OWNER of the property hereby conveyed and that he has perfect right, title and interest to convey the said property to the Purchaser in the manner aforesaid and no other person has got any right, title and interest to convey the said property to the Purchaser in the manner aforesaid.

VENDOR

S-dth

For

PURCHASER

For M/s.Greenergy Pure Ethanol Private Limited

Man

Manager/Authorized Signatory

Document No. 790 of 2024 of Book 1 Contains 19 Sheets 3 Sheet

Registering Officer

II) The VENDOR doth hereby declare that hereafter the VENDOR nor his heirs has got any manner of Right, Title or Interest over the property hereby sold. Even if anybody claims any such right, such claim shall be null and void.

III) The VENDOR doth hereby declare that there are no encumbrance, lien, trust, attachment, claim, charge, whatsoever which is subsisting on the said property and that the said property is not the subject matter of any litigation or proceedings and is not charged in favour of any Court, Revenue or other authority. If, However, there happen to be any encumbrances or litigation over the property and are disclosed at a later date, the VENDOR undertakes to clear them at his own cost and own motion and also shall compensate the Purchaser if any losses or expenses if any, the Purchaser may be put to, owing to the existence of such encumbrances and defects binding the VENDOR's other properties movable and immovable and also binding himself personally.

IV) The VENDOR doth hereby covenant with the Purchaser that the Purchaser shall and may at all times hereafter quietly and peacefully possess and enjoy the said property without any let or interruption or disturbances by the VENDOR or by any one claiming through him.

V) The VENDOR doth hereby covenant with the Purchaser that he and all persons lawfully and equitably claiming title will from time to time and at all times hereafter at the cost of the Purchaser execute and register all such acts, deeds and things for further and more perfectly assuring the title of the Purchaser in respect of the property hereby conveyed.

VI) The VENDOR doth hereby covenant with the Purchaser that he shall sign and execute any rectification at the expenses of purchaser that may be necessary in order to make this sale absolute.

PURCHASER **VENDOR**

For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

S. Nath

Document No. 790 of 2024 of Book 1 Contains 1-4 Sheets 4 Sheet

Registering Officer

VII) The VENDOR doth hereby covenant with the Purchaser that he has, this day handed over to the Purchaser all documents and records pertaining to the title of the schedule mentioned property.

VIII) The VENDOR doth hereby declare that all taxes and other public charges payable in respect of the schedule mentioned property hereby conveyed has been paid up to this date and further covenant with the Purchaser that there are no arrears of tax payable to Government or local body.

IX) The VENDOR doth hereby declare and assure the Purchaser that he shall indemnify and shall keep indemnified the Purchaser against any loss or damage that the Purchaser may be put to by reason of any kind of encumbrance over the property.

X) The VENDOR hereby expressly declares that the sale of property mentioned in the schedule hereunder is not in violation of any law.

XI) The VENDOR doth hereby covenant with the Purchaser that he shall sign and execute any rectification at the expenses of purchaser that may be necessary in order to make this sale absolute.

XII) The VENDOR doth hereby covenant with the Purchaser that he shall also sign and execute any letter or form that may be required for the mutation of name in the revenue records and transfer of Patta in favour of the Purchaser or for such other purposes.

To this effect, the VENDOR has executed this Deed of Absolute Sale on the day, month and year first above mentioned in the presence of following witnesses.

SCHEDULE OF PROPERTY

Karur District, Karur Registration District, Kulithalai Sub-Registration District, Kulithalai Taluk,

PURCHASER **VENDOR**

For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

Document No. 790 of 2024 of Book 1 Contains 19 Sheets 5 Sheet

Registering Officer

1) Within limits of Kumaramangalam Village, in Ayan Nanja Survey No.63 in Land measuring **Acre 2.92 Cents** (equal to Hectare 1.18.5) which is Eastern-side out of Acre 5.92 Cents (equal to Hectare 2.39.5)

2) Within limits of Kumaramangalam Village, in Ayan Nanja Survey No.65/2 in Land measuring **Acre 0.24 Cents** (equal to Hectare 0.09.5)

3) Within limits of Kumaramangalam Village, in Ayan Nanja Survey No.65/3 in Land measuring **Acre 2.44 Cents** (equal to Hectare 0.99.00) which is Eastern-side Half share to out of Acre 4.88 Cents (equal to Hectare 1.97.5)

North by : Railway Line
East by : Lands purchased by Ganesh
West by : Lands Belongs to Ganesh
South by : Vadivu Canal

Within this Four boundaries, Total Extent of above said Lands in Item Nos.1, 2 & 3 is **Acre 5.60 Cents (Equal to Hectare 2.27.0)** together with the pathway, easement, canal and irrigation rights etc.,

The Property lies within the limits of Kulithalai Taluk and presently comprised in Survey No.63/2, 65/2 & 65/3B of Kumaramangalam Village vide Patta No.1079 & 1058 respectively.

PURCHASER

For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

VENDOR

S. Ash.

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Registering Officer

The Present market value of the Property is Rs.84,00,000/-.

PURCHASER

For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

VENDOR

Witnesses:

1. **(Panneer Selvam)**, S/o. Chinnappa Gounder, Door No.333, Thirumurugan Nagar, Pettavaithalai, Srirengam Taluk, Trichirapalli District - 639112. (Aadhar No.2618 2306 7865)

2. **(Jeelan Basha),** S/o. Shaik Mahamood, Door No.3/501-C-2, Anbu Nagar, Avalappalli Road, Hosur - 635109, Krishnagiri Dt. (Aadhar No.5189 1339 3001)



Drafted by:-

J.KAJA MOIDEEN,B.A.,M.L.,
Advocate, (Roll No.Ms3654/2010)
#71, 1st Floor, EVR Road,
Puthur, Trichy-620017.
Cell No. 99408-71076.

Document No. 790 of 2024 of Book 1
Cont... 19 Pages 7 Sheet

Registering Officer

The Statement Under Rule 3 (1) of Tamil Nadu Stamp (Prevention of Undervaluation of Instruments) Rules 1968

District:- Karur Kulithalai S.R.O

Taluk :- Kulithalai Village:- Kumaramangalam

Serial No	Survey No	Extent Acre - Cents	Nature of Property	Market Value
1	63/2	2 . 92	Nanja	Rs.43,80,000/-
2	65/2	0 . 24	Nanja	Rs. 3,60,000/-
3	65/3B	2 . 44	Nanja	Rs.36,60,000/-
Total		**Acre 5 . 60 Cents**		**Rs.84,00,000/-**

DECLARATION

Affidavit that the Property is not situated in water body area.

(Declaration according to Judgment in W.P.(MD)No.22163/2018)

We certify that the property identified in this document is not comes under the category of water bodies, waterways or catchment areas.

We also understand that we may be subject to legal action if we are later found to have misrepresented or misrepresented them.

PURCHASER

For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

VENDOR

S. Ash

Document No. 790 of 2024 of Book 1 Sheets 8 Sheet 19

Registering Officer

R/Kulithalai/Book-1/790/2024

CERTIFICATE UNDER SECTION 42 OF THE INDIAN STAMP ACT 1899

S.No 599 of 2024

I hereby certify that a sum of ₹ 5,88,000/- (Rupees Five Lakh Eighty Eight Thousand only) on account of deficit stamp duty has been levied under section 41 of the Stamp Act in respect of this instrument from Mr. தோட்டா கிரண் குமார் residing at No.324, 1st Floor, Golden Point, 4, Vasant Nagar, Bangalore, Karnataka, India, 560051.

Sub Registrar, Kulithalai
Date: 26/02/2024

Signature of Sub Registrar and Collector under Section 41 of the Indian Stamp Act

Presented in the office of the Sub Registrar of Kulithalai and fee of ₹ 1,69,810/- paid at 04:43 PM on the 26/02/2024 by

Left Thumb





For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

Additions as per recitals of document

Execution admitted by
Left Thumb





S. Aarthi

Identity of the person verified through Consent based AADHAAR Authentication using Thumb Impression with UIDAI reference No. : UKC:674007a4fa3fc06a3e48f9888b01c404ce4633 **(Details from UIDAI : Aarthi Sasivarnan W/O Naveenkumar, 1986, xxxxxxxx1826)**



Claim admitted by
Left Thumb





For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

Identity of the person verified through Consent based AADHAAR Authentication using Thumb Impression with UIDAI reference No. : UKC:074007796a98f9c9b4a3fa8643dd294ac1463 **(Details from UIDAI : Thota Kiran Kumar S/O Naga Venkata Siva Sai Gangadhara Rao, 05-06-**



Document No. 790 of 2024 Book 1
Contains 19 sheets

Registering Officer

	1992, xxxxxxxx7541)	

26th day of February 2024

krishnan marappan
Sub Registrar
Kulithalai

Registered as Number R/Kulithalai/Book-1/790/2024

Date 26/02/2024
Kulithalai

krishnan marappan
Sub Registrar

Document No. 790 of 2024 of Book 1
Contains 19 Sheets 10 Sheet

Registering Officer

தமிழ்நாடு அரசு

வருவாய்த் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

மாவட்டம் : கரூர் வட்டம் : குளித்தலை

வருவாய் கிராமம் : குமாரமங்கலம் பட்டா எண் : 1079

உரிமையாளர்கள் பெயர்

1. நவீன்குமார் மனைவி ஆர்த்தி

புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	
63	2	--	--	1 - 18.50	27.81	--	--	2019/0105/14/019203--2019/14/03/000015SD -- 16-08-2019
65	3B	--	--	0 - 99.00	23.24	--	--	2019/0105/14/025349--2019/14/03/000020SD -- 20-08-2019
				2 - 17.50	51.05			

குறிப்பு2 :

1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் https://eservices.tn.gov.in என்ற இணைய தளத்தில் 14/03/001/01079/30127 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 22-02-2024 அன்று 09:52:32 AM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின்2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

Document No. 790 of 2024 of Book 1 Contains 19 Sheets 11 Sheet

Registering Officer

தமிழ்நாடு அரசு

வருவாய்த் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

மாவட்டம் : கரூர்

வட்டம் : குளித்தலை

வருவாய் கிராமம் : குமாரமங்கலம்

பட்டா எண் : 1058

உரிமையாளர்கள் பெயர்

1. நவின்குமார் மனைவி ஆர்த்தி

புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	
65	2	--	--	0 - 9.50	2.28	--	--	2019/0103/14/080635-- -- 05-02-2019
				0 - 9.50	2.28			

குறிப்பு2 :

1.	மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் https://eservices.tn.gov.in என்ற இணைய தளத்தில் 14/03/001/01058/30114 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
2.	இத் தகவல்கள் 22-02-2024 அன்று 09:50:30 AM நேரத்தில் அச்சடிக்கப்பட்டது.
3.	கைப்பேசி கேமராவின்2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

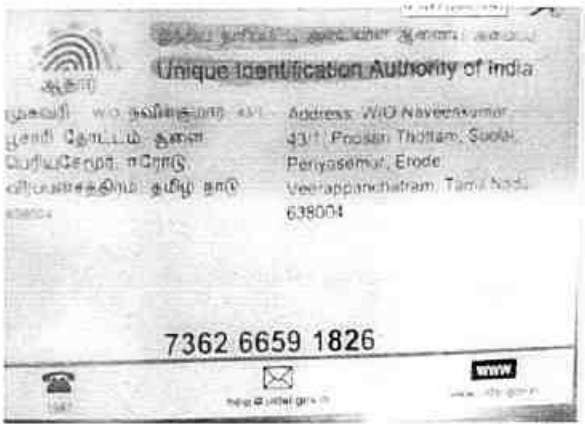
For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

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Registering Officer







S. Aathi

Document No. 790 of 2024 of Book 1
1 Contains 19 Sheets 13 Sheet

Registering Officer

भारत सरकार
Government of India

आधार

भारतीय विशिष्ट पहचान प्राधिकरण
Unique Identification Authority of India

Enrolment No.: 0647/02766/07908

To
Thota Kiran Kumar
S/O Naga Venkata Siva Sai Gangadhara Rao
1-188-28
siva ganga
siva ganga
Machilipatnam
Krishna Andhra Pradesh - 521001
9071357624

आपका आधार क्रमांक / Your Aadhaar No. :
4285 8191 7541
VID : 9166 9218 3186 3447
मेरा आधार, मेरी पहचान

Government of India

AADHAAR

सूचना

- आधार पहचान का प्रमाण है, नागरिकता का नहीं।
- सुरक्षित QR कोड / ऑफलाइन XML / ऑनलाइन ऑथेंटिकेशन से पहचान प्रमाणित करें।
- यह एक इलेक्ट्रॉनिक प्रक्रिया द्वारा बना हुआ पत्र है।

INFORMATION

- Aadhaar is a proof of identity, not of citizenship.
- Verify identity using Secure QR Code/ Offline XML/ Online Authentication.
- This is electronically generated letter.

- आधार देश भर में मान्य है।
- आधार कई सरकारी और गैर सरकारी सेवाओं को पाना आसान बनाता है।
- आधार में मोबाइल नंबर और ईमेल ID अपडेट रखें।
- आधार को अपने स्मार्ट फोन पर रखें, mAadhaar App के साथ।

- Aadhaar is valid throughout the country.
- Aadhaar helps you avail various Government and non-Government services easily.
- Keep your mobile number & email ID updated in Aadhaar.
- Carry Aadhaar in your smart phone – use mAadhaar App.

भारत सरकार
Government of India



Thota Kiran Kumar
Date of Birth/DOB: 05/06/1992
Male/ MALE

Issue Date : 11/12/2011

4285 8191 7541
VID : 9166 9218 3186 3447
मेरा आधार, मेरी पहचान

भारतीय विशिष्ट पहचान प्राधिकरण
Unique Identification Authority of India

Address:
S/O Naga Venkata Siva Sai Gangadhara Rao,
1-188-28, siva ganga, siva ganga,
Machilipatnam, Krishna,
Andhra Pradesh - 521001

Download Date : 31/01/2023

4285 8191 7541
VID : 9166 9218 3186 3447

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For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

Document No. 790 of 2024 of Book 1
Contains 19 Sheet 4

Registering Officer

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Scanned with OKEN Scanner


Government of India

பன்னீர்செல்வம் சி
Panneerselvam C
பிறந்த நாள்/DOB: 07/01/1960
ஆண் / MALE

2618 2306 7865
VID : 9125 9945 9452 4471

எனது ஆதார், எனது அடையாளம்


Unique Identification Authority of India

முகவரி:
த/பெ சின்னப்ப கவுண்டர், எண் 333
திருமுருகன் நகர், பெட்டவாய்த்தலை,
திருச்சிராப்பள்ளி,
தமிழ் நாடு - 639112

Address:
S/O CHINNAPPA GOUNDER, NO 333
THIRUMURUGAN NAGAR, Pettavathalai,
Tiruchirappalli,
Tamil Nadu - 639112

2618 2306 7865
VID : 9125 9945 9452 4471

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Registering Officer





J. Jeelan

Document No. 790 of 2024 of Book 1
Contains 19 Sheets 16 Sheet
Registering Officer

सत्यमेव जयते

GOVERNMENT OF INDIA
MINISTRY OF CORPORATE AFFAIRS

Central Registration Centre

Certificate of Incorporation

[Pursuant to sub-section (2) of section 7 and sub-section (1) of section 8 of the Companies Act, 2013 (18 of 2013) and rule 18 of the Companies (Incorporation) Rules, 2014]

I hereby certify that GREENERGY PURE ETHANOL PRIVATE LIMITED is incorporated on this First day of July Two thousand twenty-two under the Companies Act, 2013 (18 of 2013) and that the company is limited by shares.

The Corporate Identity Number of the company is U24200KA2022PTC163272.

The Permanent Account Number (PAN) of the company is **AAJCG8851F** *

The Tax Deduction and Collection Account Number (TAN) of the company is **BLRG29460E** *

Given under my hand at Manesar this First day of July Two thousand twenty-two .

Digital Signature Certificate
SHIVARAJ C RANJERI
ASST. REGISTRAR OF COMPANIES
For and on behalf of the Jurisdictional Registrar of Companies
Registrar of Companies
Central Registration Centre

Disclaimer: This certificate only evidences incorporation of the company on the basis of documents and declarations of the applicant(s). This certificate is neither a license nor permission to conduct business or solicit deposits or funds from public. Permission of sector regulator is necessary wherever required. Registration status and other details of the company can be verified on www.mca.gov.in

---

Mailing Address as per record available in Registrar of Companies office:

GREENERGY PURE ETHANOL PRIVATE LIMITED
No.324, 1st Floor, Golden Point 4,, Vasnat Nagar, Bengaluru, Bangalore,
Karnataka, India, 560051

For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

* as issued by the Income Tax Department

Document No. 790 of 2024 of Book 1
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Registering Officer

GREENERGY PURE ETHANOL PRIVATE LIMITED

Regd. Off: No.324, Golden Point 4, Off. Queens Road Cross, Vasant Nagar, Bengaluru 560052, KA, IN

Ph: 080- 49222222 II Email: cs@goldengrp.co.in II CIN: U24200KA2022PTC163272

CERTIFIED TRUE COPY OF THE RESOLUTION PASSED AT THE MEETING OF THE BOARD OF DIRECTORS OF GREENERGY PURE ETHANOL PRIVATE LIMITED HELD AT THE REGISTERED OFFICE OF THE COMPANY ON 5TH FEBRUARY 2024 AT 9.00 AM

SUB: AUTHORIZATION FOR PURCHASE OF LANDS IN THE NAME OF COMPANY

RESOLVED THAT pursuant to applicable provisions of Companies Act, 2013 and other applicable statutory rules and regulations and subject to approval of government authorities, the approval of the Board of Directors, be and is hereby accorded to the Company to purchase parcels of Lands as detailed below and indicated in the Site Plans in terms of agreements proposed to be entered into by the Company and for consideration as agreed between the parties to agreements.

1. Lands in Survey Nos. 63, 65/2, 65/3 presently comprised in New Survey Nos. 63/2, 65/2 & 65/3B of Kumaramangalam Village, total extent of Acre 5.60 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.
2. Lands in Survey Nos. 68/1A, 70, 68/1B, presently comprised in New Survey Nos. 68/1A1, 70/1 & 68/1B1 of Kumaramangalam Village, total extent of Acre 3.77 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.
3. Lands in Survey No. 63 presently comprised in New Survey No. 63/1 of Kumaramangalam Village, total extent of Acre 2.00 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.
4. Lands in Survey Nos. 63, 65/1, 65/3 presently comprised in New Survey Nos. 63/1, 65/1 & 65/3A of Kumaramangalam Village, total extent of Acre 3.60 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.
5. Lands in Survey No. 67 of Kumaramangalam Village, total extent of Acre 0.98 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.
6. Lands in Survey Nos. 68/1A, 70 presently comprised in New Survey Nos. 68/1A2, 70/2 of Kumaramangalam Village, total extent of Acre 2.85 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.
7. Lands in Survey No. 68/1B of Kumaramangalam Village, total extent of Acre 0.90 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.
8. Lands in Survey Nos. 68/2, 69/2, 69/1, 72/2 of Kumaramangalam Village, total extent of Acre 2.35 Cents, Kulithalai Taluk, Karur, Tamil Nadu, India.

RESOLVED FURTHER THAT Mr.Thota Kiran Kumar, S/o. Mr. Naga Venkata Sai Siva Gangadhara Rao Thota, bearing PAN ASWPT6005F and Aadhar No 428581917541;Manager of the Company; be and is hereby authorized to communicate on behalf of the company with their Vendor, Government Officials and to represent the company before the concerned Sub Registrar Office, to sign the sale agreements and sale deeds on behalf of the company and to get register the Sale

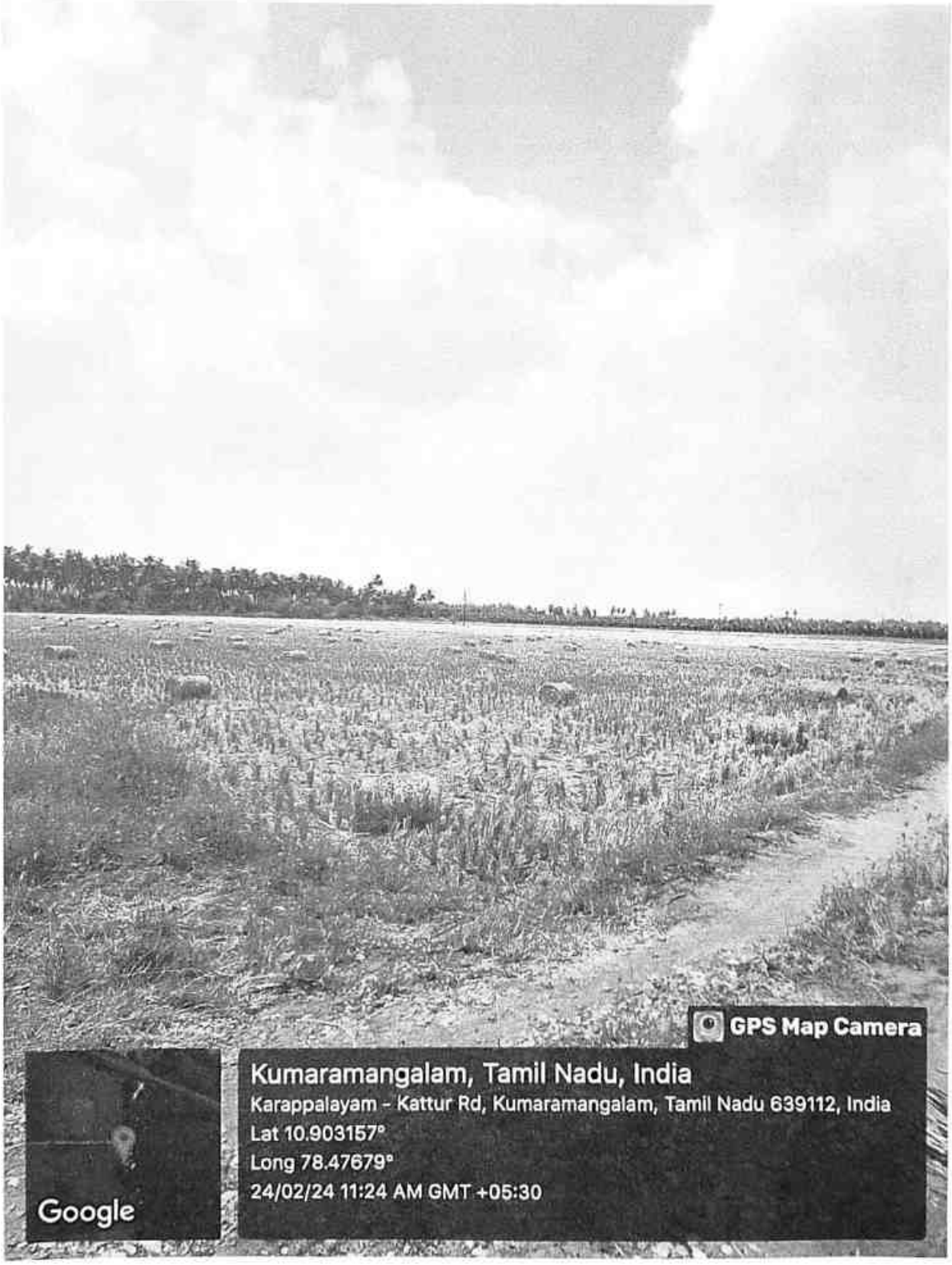
For Greenergy Pure Ethanol Pvt Ltd

Authorised Signatory

For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

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For M/s.Greenergy Pure Ethanol Private Limited

Manager/Authorized Signatory

Document No 790 of 2024 of Book 1

Contains 19 Sheets 19 Sheet

Registering Officer

ANNEXURE-9

GREENERGY PURE ETHANOL PRIVATE LIMITED

Regd. Off: No.324, Golden Point 4, Off. Queens Road Cross, Vasant Nagar, Bengaluru 560052, KA, IN
Ph: 080- 49222222 || **Email:** cs@goldengrp.co.in || **CIN:** U24200KA2022PTC163272

GPEPL/TN/LTR-05/Land Conv/24-25 **Date: 18-09-2024**

To,
The Sub-Colletor,
Sub-Collectrate Office,
Kulithalai.

Sub.: Request of converting our Agricultural Land to Industrial Land for constructing the Ethanol factory at Kumara Mangalam Village – Kulithalai Tehsil-Karur District, Tamilnadu. – Reg.,

Dear Sir,

We are having our own land of 35 acres at Kumara Mangalam Village, Kulithalai Tehsil – Karur District vide Survey Numbers – 61, 63, 64, 65, 67, 68, 69/1, 2, 70/1, 2, 72/2 and in that we are planning to construct a Zero discharge Pure Ethanol Plant of 600KLPD. We had designed our plant as a Eco-Friendly plant and we use the Agri.-products (Rice & Maize) as the raw materials.

For the same we have made the payment of Rs. 15 Lakhs in the Tamil Nadu Government Single Window Portal (Copy attached) Ref. CAF : 153772, Dtd.: 20-06-2024.

From this we are planning to provide local employment for 600 - 800 peoples here and the plant will generate revenue of more than 100 Cr. (GST Collection) per year to the government. Apart from that there will be a huge foreign exchange savings on crude imports. The total investment planned for this project is approx..600 Cr.

In this connection we are in need of converting our land from Agricultural Land to Industrial Land and in this regards we request you to kindly do the needful and convert our land to Industrial land for constructing the above plant. We undertake to follow all the guidelines and directions issued by your office in this regard.

We seek your support in this matter please.

Thanking You,

Your's faithfully,

For Greenergy Pure Ethanol Pvt. Ltd.

Authorised Signatory



ANNEXURE-10

भारत सरकार

Government of India

वाणिज्य और उघोग मंत्रालय

Ministry of Commerce & Industry

औघोगिक सहायता सचिवालय

Department for Promotion of Industry and Internal Trade

Industrial Entrepreneurs Memorandum Section

प्राप्ति सूचना

Authenticity of the document can be verified by scanning the QR code.

DEVELOPMENT: ACKNOWLEDGEMENT

Online Ref No.:- IEM/A/ACK/7685/2025

संख्या / No.:- 67/N/SIA/IMO/2025

नई दिल्ली दिनांक

एतद द्वारा निम्नलिखित का विनिर्माण करने सम्बन्धी आपका ज्ञान प्राप्त होने की सूचना दी जाती हैं।

New Delhi, Date: 12/02/2025

Modified On: 12/02/2025

The receipt of your memorandum for the manufacture of following is hereby acknowledged:-

S.No.	State	GSTIN	Location	Sector	Item		Description	Total Annual Capacity/Unit		
					NIC No	Description		Existing	Proposed	Total
1	Tamil Nadu	33AAJCG8851F1ZH	Survey no 63 1, Kumaramangalam, Kulithalai, Kumaramangalam, KARUR, Tamil Nadu - 639107	Fermentation Industries	11019	DISTILLING, RECTIFYING AND BLENDING OF SPIRITS	(Un denatured ethyl alcohol of an alcoholic strength by volume of 80% or higher) manufacture of Denatured Enhydrous Ethanol using rice including damaged rice or maize / corn / tapioca/rice combination including damaged maize/corn/tapioca	0.00 Kilo Lit	198000.00 Kilo Lit	198000.00 Kilo Lit

****

******* No More Items *******

This acknowledgement is subject to the provisions of Press Note No. 6 dated 29 July 1993, Press Note No. 17 dated 28th November 1997 and Press Release dated 17-01-2012 (F.No. 7(7)/2011-IP) regarding the significance implications and legal status of filing of Industrial Entrepreneur Memorandum. Press note no. 17(1997 series) enclosed.

Registered Address:

Greenergy Pure Ethanol Private Limited
No 324 1st Floor Golden Point No 4,
Vasant Nagar, Bangalore 560051,
Vasant Nagar, Bengaluru,
BANGALURU (URBAN), KA - 560051

S.No.	State	GSTIN	District	Location List
1	Tamil Nadu	33AAJCG8851F1ZH	KARUR	Survey no 63 1, Kumaramangalam, Kulithalai, Kumaramangalam, KARUR, Tamil Nadu - 639107

NIC No :** 11019 *** No Potable Alcohol shall be produced.

Note:- ***This is computer generated document. Hence, no signature is required.***

भारत सरकार

Government of India

वाणिज्य और उघोग मंत्रालय

Ministry of Commerce and Industry

औघोगिक सहायता सचिवालय

Secretariat for Industrial Assistance

औघोगिक उघमी ज्ञापन अनुभाग

Industrial Entrepreneurs Memorandum Section

प्राप्ति सूचना

CHAPTER-I

EXHIBIT NO.74
PRESS NOTE NO.17 (1997 Series)
FILING OF INDUSTRIAL ENTREPRENEURS MEMORANDUM

Subject: Filing of Industrial Entrepreneurs Memorandum - reg.

Under the present Industrial Policy, entrepreneurs are required to submit an Industrial Entrepreneurs Memorandum (IEM) in the prescribed form with five spare copies alongwith a Demand Draft for Rs.1000/- to the Secretariat for Industrial Assistance (SIA) in the Department of Industrial Policy and Promotion, Ministry of Industry. On filing the memorandum, entrepreneurs are given an acknowledgement by the Entrepreneurial Assistance Unit (EAU) of the SIA, Ministry of Industry. Requirement of entrepreneurs having to file a memorandum is intended mainly to conduct a limited post-facto check to see whether the proposed manufacturing activity requires an industrial licence or not.

2. Acknowledgement of the IEM which is given on the spot on prima facie evidence of not attracting the provisions of licensing, cannot, therefore, be construed as a clearance or approval to carry on an industrial activity contemplated in the IEM unless the provisions of statutes/regulations/notifications etc. issued by the Central or State Governments from time to time or any specific directions or Stay Orders issued by the Court/competent authority relevant to such an activity, are also fully complied with, or in no way contravened, as the case may be.

3. It is therefore, clarified that it is the responsibility of the entrepreneur to ensure that the manufacturing activity, as specified in the IEMs, does not come into conflict with other legal provisions or directions or standing orders. In case of doubt, the entrepreneur may avail of the assistance of the Secretariat for Industrial Assistance to seek clarifications on whether the industrial activity contemplated in the IEM for which an acknowledgment was issued by the SIA would be repugnant to any statutes/regulations/notifications etc. issued by the Central Government or on the details of other legal provisions or directions they have to additionally comply with before such an activity is taken.

4. All concerned are requested to note these clarifications for compliance.

F. No.10(43)/97-IP New Delhi, the 28th November, 1997

Forwarded to Press Information Bureau for wide publicity to the contents of the above Press Note.

Sd/-
(Ashok Kumar)
Joint Secretary to the Govt. of India

Press Information Officer
Press Information Bureau
New Delhi.

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ANNEXURE-11

M/S. GREENERGY BIO REFINERIES PVT LTD

ANNEXURE I

EQUIPMENT SPECIFICATION AND LIST



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EQUIPMENT SPECIFICATION AND LIST

A. GENERAL ASPECTS

The design and construction standards, as well as material of construction is presented in this chapter.

1.1.1 Standards and codes of construction of supplied materials

The standards and codes for construction of pressure vessels are American Society of Mechanical Engineers (ASME) latest codes. ASTM, ANSI, and BIS would also be employed wherever applicable. API-650 would be employed for large tanks. All electrical equipment and instruments in the Distillation and Dehydration unit will conform to safety requirement as per IS1942.

The electrical equipment and control instrumentation shall comply with the International Electro Technical Commission (IEC) recommendations.

1.1.2 Material of construction

Equipment and circuits in contact with process fluids

- AISI 304 for Fermentation unit.
- AISI 304 for Distillation stripping unit (for equipment in contact with fermented mash or stillage)
- AISI 304 for Distillation concentration part
- AISI 304 for Dehydration unit
- AISI 304 for Separation unit
- AISI 304 for stillage Evaporation shells and for tubes
- Carbon Steel for all parts in contact with water and steam.
- Mild steel (M.S.) for the supports, flanges, bolts, etc.

1.1.3 Sheet metal equipment

These include tanks, columns, shell and tube heat exchangers, and process separators.

Tanks

These are conical bottom tanks. They were selected to ensure that there are no dead zones for bacteria to inhibit after each batch, following the cleaning of the tanks. This equipment would be partially fabricated and mounted on site.

Columns

All columns are of the self-supporting type or guided by steel structure.

They will be executed in sections assembled by means of steel flanges.

The columns are equipped with valve trays or bubble caps trays in accordance with the diameters and the process.

Shell and Tube Heat Exchangers (Tubular Exchangers)

Type: Tubular exchangers for condensers and reboilers.

They are either horizontal or vertical shell and tube type, depending on their function. Each type comprises:

- One cylindrical shell
- Two tubes plates
- End boxes removable for access and cleaning
- Sockets, fittings and mountings.

Miscellaneous

- Painting

Mild steel parts of equipment would be supplied with coating of anti-rust paint for protection applied after thorough cleaning of surface.

- Pickling of welding seams

Weld seams of all SS sheet construction parts of equipment supplied will be thoroughly pickled and rinsed.

1.1.4 Piping, Accessories and Valves

Valves

Valves are selected in accordance with the fluid:

Fermented mash and stillage in the distillation

- Rotary valve in stainless steel for diameter below ND65.
- Butterfly valve in stainless steel and body suitable coating.

Other process fluid

- Rotary valve in stainless steel for diameter below ND65.
- Butterfly valve in stainless steel and body suitable coating.

Utilities fluid

- Rotary valve in carbon steel with for diameter below ND65.
- Butterfly valve in stainless or carbon steel (depending on the fluid) and body suitable coating.
- Valve in carbon steel for steam.

1.1.5 Mechanical equipment

Pumps

Each Pump is comprised of:

- One body, impeller, screw shaft, or multi-stage with side channel, and ball bearings
- One electric motor (IE3, IP55) characteristic: 415 volts - 50 Hz - 3 phases
- One direct coupling with casing
- One common base plate

They are of the following types:

- Centrifugal pumps
- Self-priming centrifugal pumps
- Volumetric pumps
- Liquid ring pumps (for vacuum)
- Dosing pump for small flow

Agitators

Agitators are needed for the liquefaction tanks, fermenters and the syrup tanks (after concentration) to ensure homogenization, and prevent build-up of scales, which might end up reducing the volume of the tanks in question.

Other equipment

Plate Heat Exchangers (PHE)

Plates exchangers designed for alcoholic vapors condensation. Classical plate exchangers used for cooler or heater on fluid with no risk of scaling.

1.1.6 Instruments installed on the unit

The supply includes the measuring instruments (captors, transmitters, which will deliver 4-20 mA output), control valves, and process alarm devices. Control valves are pneumatical type with I/P converter.

Process parameter	Instrument
Flow indication	▪ Mass flow meter ▪ Electromagnetic flow meter with transmitter ▪ Vortex ▪ Magnetic flowmeter with transmitter
Level indication	▪ Pressure transmitter with diaphragm D ▪ Differential pressure transmitter ▪ Magnetic level indicator (Bicolor Type)
Level switch	▪ Capacitive
Pressure	▪ Absolute pressure transmitter ▪ Gauge pressure transmitter
Temperature	▪ Pt 100 Ohms with transmitter
Density	▪ Density transmitter

1.1.7 Centralized computer control system.

The automation and control system for all the process sections and utility sections described above includes a centralized computer control system obtaining the optimum control at all times and all conditions. The control system cabinets will have to be in an Air-Conditioned room, included in this supply are the following:

- Painted steel Cabinets
- 220 VAC 25A and 300 mA differential protection connection
- Uninterruptible power supply (UPS)
- DCS based automation composed of:
  - CPU in the general control panel.
  - Digital inputs/outputs for motors (pumps, agitators …).
  - Digital and analog inputs for instrumentation.
  - Digital inputs/outputs for valves.
  - Active and passive analog or digital inputs.
  - Analog outputs for the automatic valve connection.
- SCADA with visualization for inputs and outputs, control PIDs, alarms, maneuver for pumps and animation.
- PC computers – 3 sets with windows 11 (32 Inch Display).
- Local stop buttons for motors.
- Electrical drawings.
- Program Engineering includes:
  - Loading of Operating systems and licenses, installation of communication cards and their verification.
  - General diagrams and equipment installation plans.
  - List of process variables
  - Definition recording data.
  - Test Protocols.
  - Logic Programs, grafect and analogical controls
  - Definition of the memory map of I/O.
  - Historical and graphs.
- Start-up engineering includes:
  - Simulation tests
  - Training of the personnel and manuals
  - Operational tests and start up.
- Final documentation.

B. LIST OF MAIN EQUIPMENT

The table below presents a list of the main equipment for the plant.

- **Flour outlet**
  The grain flour will be delivered to the inlet of Dough Mixer in Liquefaction Section by the CLIENT, with the following characteristics:
  - Same composition as the raw material (no bran separation)
  - Flour particles size distribution:

max 1.5 mm
90% > 0.15 mm
50% > 0.5 mm
10% > 1.0 mm

Grain Silo (Section 100): CLIENT SCOPE

Grain Handling and Milling (Section 200): CLIENT SCOPE

Liquefaction (Section 300):

Sheet Metal Equipment –

Sr. No.	Tag ID	Designation	Technical Details	MOC	Qty	Supplier
1	R 300	Water Dilution tank	Type: Conical Bottom, Cylindrical / Vertical	SS304	1	INTERIS
2	R 320	Pre-liquefaction tank	Type: Conical Bottom, Cylindrical / Vertical	SS304	1	INTERIS
3	R 321	Liquefaction tank	Type: Conical Bottom, Cylindrical / Vertical	SS304	1	INTERIS
4	R 322	Liquefaction tank	Type: Conical Bottom, Cylindrical / Vertical	SS304	1	INTERIS

Plate Heat Exchangers –

Sr. No.	Tag ID	Designation	Technical Details	MOC	Qty	Supplier
1	E300	Process water heater	Type: PHE	SS316	1	INTERIS
2	E320 A/B	Wine Preheater	Type: Wide gap PHE	SS316	2	INTERIS
3	E 321 A/B	Liquefied mash cooler	Type: Wide gap PHE	SS316	2	INTERIS
4	E 301	Process Water cooler	Type: Wide gap PHE	SS316	1	INTERIS
5	E 310 A/B	Dilution Water Cooling	Type: Wide gap PHE	SS316	2	INTERIS

Mechanical Equipment –

Sr. No.	Tag ID	Designation	Technical Details	MOC	Qty	Supplier
1	P 300 A/B	Water dilution transfer pump	Type: Centrifugal, Double Mechanical Seal	SS304	1+1	INTERIS
2	P 320 A/B	Pre-Liquefied mash pump	Type: Centrifugal, Double Mechanical Seal	SS304	1+1	INTERIS
3	P 321 A/B	Liquefied mash transfer pump	Type: Centrifugal, Double Mechanical Seal	SS304	1+1	INTERIS
4	P 322 A/B	Liquefied mash to fermentation section pump	Type: Centrifugal, Double Mechanical Seal	SS304	1+1	INTERIS
5	M 323	Static mixers (acid + liquefied mash)		SS304	1	INTERIS
6	M 324	Static mixer (Glucoamylase)		SS304	1	INTERIS
8	M 300	Pre-masher / Dough mixer			1	INTERIS

				SS304		
9		CIP nozzles		SS304	2	INTERIS
10		Filter/strainer for CIP return			2	INTERIS
11	J 320	Jet cooker with bypass arrangement		SS304	1	INTERIS
12	A 300	Agitator for water Dilution Tank	Type: Top Entry	SS304	1	INTERIS
13	A 320	Agitator for Pre-liquefaction Tank	Type: Top Entry	SS304	1	INTERIS
14	A 321	Agitator for Liquefaction Tank	Type: Top Entry	SS304	1	INTERIS
15	A 322	Agitator for Liquefaction Tank	Type: Top Entry	SS304	1	INTERIS
16		Electrical & Instrumentation			Lot	INTERIS
17		Piping, Valves and Pipe Fittings			Lot	INTERIS

Fermentation (Section 400):

Sheet Metal Equipment –

Sr. No.	Tag ID	Designation	Technical Details	MOC	Qty	Supplier
1	R 411	Pre-fermenter tank	Type: Conical Bottom (10°), Cylindrical / Vertical	SS304	1	INTERIS
2	R 405	Dry Yeast Dilution tank	Thk – 4	SS304	1	INTERIS
3	R 421	Fermenter tank	Type: Conical (Bottom 10° – Top 15°), Cylindrical / Vertical Thk – 6 / 5 / 5	SS304	1	INTERIS
4	R 422	Fermenter tank	Type: Conical (Bottom 10° – Top 15°), Cylindrical / Vertical Thk – 6 / 5 / 5	SS304	1	INTERIS
5	R 423	Fermenter tank	Type: Conical (Bottom 10° – Top 15°), Cylindrical / Vertical Thk – 6 / 5 / 5	SS304	1	INTERIS
6	R 424	Fermenter tank	Type: Conical (Bottom 10° – Top 15°), Cylindrical / Vertical Thk – 6 / 5 / 5	SS304	1	INTERIS
			Type: Conical			

7	R 425	Fermenter tank	(Bottom 10° – Top 15°), Cylindrical / Vertical Thk – 6 / 5 / 5	SS304	1	INTERIS
8	R 426	Fermenter tank	Type: Conical (Bottom 10° – Top 15°), Cylindrical / Vertical Thk – 6 / 5 / 5	SS304	1	INTERIS
9	R 427	Fermenter tank	Type: Conical (Bottom 10° – Top 15°), Cylindrical / Vertical Thk – 6 / 5 / 5	SS304	1	INTERIS
10	R 428	Fermenter tank	Type: Conical (Bottom 10° – Top 15°), Cylindrical / Vertical Thk – 6 / 5 / 5	SS304	1	INTERIS
11	R 430	Fermented Mash buffer tank / Beer Well	Type: Conical (Bottom 10° – Top 15°), Cylindrical / Vertical Thk – 6 / 5 / 5	SS304	1	INTERIS
12	R 454	Nutrient Preparation Tank	Type: Conical Bottom (10° – 15°), Cylindrical / Vertical Thk – 4	SS304	1	INTERIS
13	R 455	Nutrient Transfer Tank	Type: Conical Bottom (10° – 15°),	SS304	1	INTERIS

			Cylindrical / Vertical Thk – 4			
14	C 410	CO_2 Wash column / Gas Scrubber (Trays / bubble cap)		SS304	1	INTERIS
15	R 406	Tank for Sealing System	Thk – 4 Volume – 5 m3	SS304	1	INTERIS

Plate Heat Exchangers –

Sr. No.	Tag ID	Designation	Technical Details	MOC	Qty	Supplier
1	E 410	Spent Feints Cooling	Type: Wide Gap PHE	SS316	1	INTERIS
2	E411	Mash cooler (Pre-Fermenter)	Type: Wide Gap PHE	SS316	1	INTERIS
3	E421 - 428	Mash coolers (Fermenters)	Type: Wide gap PHE	SS316	8	INTERIS
4	E 406	Seal Water Cooler	Type: PHE	SS316	1	INTERIS

Mechanical Equipment –

Sr. No.	Tag ID	Designation	Technical Details	MOC	Qty	Supplier
1	P 410	Water pump for wash column	Type: Centrifugal, Single Mechanical Seal	SS304	1	INTERIS
2	P 405	Yeast Transfer to Propogator Pump	Type: Centrifugal, Double Mechanical Seal	SS304	1	INTERIS
3	P 406 A/B	Pump for Sealing System	Type: Centrifugal, Double Mechanical Seal	SS304	1+1	INTERIS

4	P 411	Mash cooling pump for Pre - fermenter	Type: Centrifugal, Double Mechanical Seal	SS304	1	INTERIS
5	P 421 - 428	Mash cooling pumps for fermenters	Type: Centrifugal, Double Mechanical Seal	SS304	8+1	INTERIS
6	P 429	Transfer pump to Beer well	Type: Centrifugal, Double mechanical Seal	SS304	1	INTERIS
7	P430 A/B	Fermented mash transfer pump to distillation	Type: Centrifugal, Double Mechanical Seal	SS304	1+1	INTERIS
8	P454 A/B	Pump for Nutrient Preparation Tank	Type: Centrifugal	SS304	1+1	INTERIS
9	P455 A/B	Nutrient Transfer Pump	Type: Centrifugal	SS304	1+1	INTERIS
10	P480	Floor Washing Pump	Type: Centrifugal	SS304	1	INTERIS
11	A411	Agitators for Pre-fermenter	Type: Top Entry	SS304	1	INTERIS
12	A 405	Agitator for Dry Yeast Dilution Tank	Type: Top Entry	SS304	1	INTERIS
13	A421 – 428	Agitators for Fermenter Tank	Type: Top Entry	SS304	8	INTERIS
14	A430	Agitator for Beer Well	Type: Top Entry	SS304	1	INTERIS
15	A 454	Agitator for Nutrient Preparation tank	Type: Top Entry	SS304	1	INTERIS
16	CA 410 A/B	Root blower		SS304	1+1	INTERIS
17	BRV	Breather valve		SS304	10	INTERIS
18	SC 410	CO2 Extraction fan			2	INTERIS
19		CIP nozzles		SS304	14	INTERIS
20	EA410	Air cooler		CS	1	INTERIS
21		Air sparger		SS304	2	INTERIS
22		Electrical & Instrumentation			Lot	INTERIS
23		Piping, Valves and Pipe			Lot	INTERIS

		Fittings				

Distillation (Section 500):

Sheet Metal Equipment –

Sr. No.	Tag ID	Designation	Technical Details	MOC	Qty	Supplier
1	C 511	Stripping and Degassing columns Valve trays	To be confirmed after detailed engg	SS304	1	INTERIS
2	C 512	Degassing column Bubble cap	To be confirmed after detailed engg	SS304	1	INTERIS
3	C 520	Concentration column Valve trays	To be confirmed after detailed engg	SS304	1	INTERIS
4	C 521	Lutter column Valve trays	To be confirmed after detailed engg	SS304	1	INTERIS
5	C 500	Wash/scrubber column Structured packings-SS / bubble caps	To be confirmed after detailed engg	SS304	1	INTERIS
6	S 520	Fusel Oil decanter		SS304	1	INTERIS
7	B 520	Alcohol water tank to C521 (buffer)		SS304	1	INTERIS
8	R 515	Vent Bottle		SS304	1	INTERIS
9	R 525	Reflux tank for C520		SS304	1	INTERIS
10	R 520	Fusel oil tank		SS304	1	INTERIS
11	E515	Tubular condenser exchanger / Degassing condenser		SS304	1	INTERIS
12	E516	C512 vent condenser		SS304	1	INTERIS
13	E525	Tubular condenser exchanger / C520 vapour condensers		SS304	1	INTERIS
		Vertical tubular condenser				

14	E526	/ Vent condenser for C520 vapour		SS304	1	INTERIS

Plate Heat Exchangers –

Sr. No.	Tag ID	Designation	Technical Details	MOC	Qty	Supplier
1	E521	Alcohol water tank to C521 preheater	Type: PHE	SS316	1	INTERIS
2	E523	Low oils cooler	Type: PHE	SS316	1	INTERIS
3	E524	Low grade alcohol cooler	Type: PHE	SS316	1	INTERIS
4	E526	RS Cooler	Type: PHE	SS316	1	INTERIS

Mechanical Equipment –

Sr. No.	Tag ID	Designation	Technical Details	MOC	Qty	Supplier
1	PV500 A/B	Vacuum pumps	Type: Vacuum Pump	SS304	1+1	INTERIS
2	P 501 A/B	Wash water pump	Type: Centrifugal, Single Mechanical Seal	SS304	1+1	INTERIS
3	P510 A/B	Whole Stillage pump to separation	Type: Centrifugal, Double Mechanical Seal	SS304	1+1	INTERIS
4	P 515 A/B	Degazing reflux pump	Type: Centrifugal, Single Mechanical Seal	SS304	1+1	INTERIS
5	P 520 A/B	Pump for Spent Feints to Lutter Column	Type: Centrifugal, Single Mechanical Seal	SS304	1+1	INTERIS
6	P 521 A/B	Pump for Spent feints to Condensate polishing unit	Type: Centrifugal, Double Mechanical Seal	SS304	1+1	INTERIS
		Pump for Low oils to	Type: Centrifugal,			

7	P522 A/B	S520	Single Mechanical Seal	SS304	1+1	INTERIS
8	P 523 A/B	Alcohol water pumps	Type: Centrifugal, Single Mechanical Seal	SS304	1+1	INTERIS
9	P 524	Fusel Oil Dispatch to Storage	Type: Centrifugal, Single Mechanical Seal	SS304	1	INTERIS
10	P525 A/B	Reflux pump for column C520	Type: Centrifugal, Single Mechanical Seal	SS304	1+1	INTERIS
11	P526 A/B	RS to storage / Dehydration	Type: Centrifugal, Single Mechanical Seal	SS304	1+1	INTERIS
12	P506	Seal Water Transfer	Type: Centrifugal	SS304	1	INTERIS
13		Electrical & Instrumentation			Lot	INTERIS
14		Piping, Valves and Pipe Fittings			Lot	INTERIS

Separation (Section 600):

Sheet Metal Equipment –

Sr. No.	Tag ID	Designation	Technical Details	MOC	Qty	Supplier
1	R610	Stillage tank / Raw stillage from distillation	Type: Cylindrical / Vertical Thk – 6 / 5 / 5	SS304	1	INTERIS
2	R615	Clarified stillage intermediate tank	Type: Cylindrical / Vertical Thk - 4	SS304	1	INTERIS
3	R620	Clarified stillage tank	Type: Cylindrical / Vertical Thk – 6 / 5 / 5	SS304	1	INTERIS

Mechanical Equipment –

Sr. No.	Tag ID	Designation	Technical Details	MOC	Qty	Supplier
1	T 620	Cake transport screw		SS304	1	INTERIS
2	T 621	Cake transport screw		SS304	1	INTERIS
3	P610 A/B	Whole Stillage pump	Type: Centrifugal	SS304	1+1	INTERIS
4	P615 A/B	Decanter feed pump	Type: Centrifugal	SS304	1+1	INTERIS
5	P620 A/B	Recycled stillage to R610	Type: Centrifugal	SS304	1+1	INTERIS
6	P606 A/B	Pump for Floor Washing	Type: Centrifugal	SS304	2	INTERIS
7	A610	Agitators for Stillage tank	Type – Top Entry	SS304	1	INTERIS
8	A620	Agitators for Clarified stillage tank	Type – Top Entry	SS304	1	INTERIS
9	S621	Decanter and its			7+1	INTERIS

	A/B/C/D/E/F/G	accessories				
10		Electrical & Instrumentation			Lot	INTERIS
11		Piping, Valves and Pipe Fittings			Lot	INTERIS

Evaporation (section 700):

Sheet Metal Equipment –

Sr. No.	Tag ID	Designation	Technical Details	MOC	Qty	Supplier
1	R750	Stillage syrup tank	Type: Cylindrical / Vertical Thk – 5	SS304	1	INTERIS
2	R722	Temporary storage of stillage from E702 during the cleaning of E701	Type: Cylindrical / Vertical Thk – 5 / 5 / 5	SS304	1	INTERIS
3	R730	Process Condensate tank	Type: Cylindrical / Vertical Thk – 6 / 5 / 5	SS304	1	INTERIS
4	S712	Condensate Separator Flash	Type: Cylindrical / Vertical Thk – 6 / 5 / 5	SS304	1	INTERIS
5	S701	E701 A/B separator / VLS		SS304	1	INTERIS
6	S702	E703 separator / VLS		SS304	1	INTERIS
7	S703	E704 separator / VLS		SS304	1	INTERIS
8	S704	Process condensate separator – flash tank		SS304	1	INTERIS
9	E701 A/B	Forced circulation evaporators Tubular exchanger	Shell & Tube	SS304	1	INTERIS
10	E702	Falling film evaporator Tubular exchanger	Shell & Tube	SS304	1	INTERIS
11	E703	Falling film evaporator Tubular exchanger	Shell & Tube	SS304	1	INTERIS
12	E704	S704 FF Reboiler	Shell & Tube	SS304	1	INTERIS

13	R701	Process condensate tank for E701		SS304	1	INTERIS
14	R702	Process condensate tank for E702		SS304	1	INTERIS
15	R703	Process condensate tank for E703		SS304	1	INTERIS
16	R704	Alcohol condensate tank for dehydration		SS304	1	INTERIS
17	R706	Seal Water Tank		SS304	1	INTERIS

Plate Heat Exchangers –

Sr. No.	Tag ID	Designation	Technical Details	MOC	Qty	Supplier
1	E706	E703,704 Vapors Cooling	Type: PHE	SS316	1	INTERIS
2	E707	Seal Water Cooler	Type: PHE	SS316	1	INTERIS

Mechanical Equipment –

Sr. No.	Tag ID	Designation	Technical Details	MOC	Qty	Supplier
1	P750 A/B	Syrup pumps	Type: Centrifugal, Single Mechanical Seal	SS304	1+1	INTERIS
2	P700 A/B	Whole Stillage to S703 Pump	Type: Centrifugal, Single Mechanical Seal	SS304	1+1	INTERIS
3	P701 A/B/C	Forced circulation pump	Type: Centrifugal, Single Mechanical Seal	SS304	2+1	INTERIS

4	P703 A/B	Falling film exchanger circulation pumps	Type: Centrifugal, Single Mechanical Seal	SS304	2	INTERIS
5	P704 A/B	Falling film exchanger circulation pumps	Type: Centrifugal, Single Mechanical Seal	SS304	2	INTERIS
6	P705 A/B	Falling film exchanger circulation pumps	Type: Centrifugal, Single Mechanical Seal	SS304	2	INTERIS
7	P711 A/B	Pump for Condensate transfer to Boiler	Type: Centrifugal, Single Mechanical Seal	SS304	1+1	INTERIS
8	P712 A/B	Process condensate pumps	Type: Centrifugal, Single Mechanical Seal	SS304	1+1	INTERIS
9	P713	Drain pump for CIP drain	Type: Centrifugal, Single Mechanical Seal	SS304	1	INTERIS
10	P714 A/B	Pump for condensate to E704	Type: Centrifugal, Single Mechanical Seal	SS304	1+1	INTERIS
11	P722	Stillage Transfer pumps	Type: Centrifugal, Single Mechanical Seal	SS304	1+1	INTERIS
12	P706	Seal Water Tank	Type: Centrifugal	SS304	1	INTERIS
13	P7XX	Floor Washing Pump	Type: Centrifugal			

				SS304	1+1	INTERIS
14	A750	Agitator for Stillage syrup tank	Type – Top Entry	SS304	1	INTERIS
15	A722	Agitator for Temporary storage tank	Type – Top Entry	SS304	1	INTERIS
16		Electrical & Instrumentation			Lot	INTERIS
17		Piping, Valves and Pipe Fittings			Lot	INTERIS

Dehydration (Section 800):

Sheet Metal Equipment –

Sr. No.	Tag ID	Designation	Technical Details	MOC	Qty	Supplier
1	S821	Adsorber (with first quantity of Zeolites:)	Volume – xx m3	SS304	1	INTERIS
2	S822	Adsorber (with first quantity of Zeolites:)	Volume – xx m3	SS304	1	INTERIS
3	S810	E810 separator		SS304	1	INTERIS
4	S813	E813 separator		SS304	1	INTERIS
5	R801	RS buffer tank (1h residence time)		CS	1	INTERIS
6	R810	Process / Steam condensate tank		CS	1	INTERIS
7	R813	E813 ethanol condensate tank		CS	1	INTERIS
8	R822	Weak alcohol condensate tank		SS304	1	INTERIS
9	R825	E825 condensate tank		SS304	1	INTERIS
10	R830	E830 Condensate Tank		SS304	1	INTERIS
11	E810	Reboiler Tubular exchanger	Shell & Tube	SS304	1	INTERIS
12	E812	Superheater Tubular exchanger	Shell & Tube	SS304	1	INTERIS
13	E813	Tubular exchanger for Dehydrated vapor recovery	Shell & Tube	SS304	1	INTERIS

14	E825	Condenser	Shell & Tube	SS304	1	INTERIS
15	E826	Vent condenser	Shell & Tube	SS304	1	INTERIS
16	E831	Vent condenser	Shell & Tube	SS304	1	INTERIS
17	B812	Superheater Condensate Separator		SS304	1	INTERIS
18	B826	Vapor Separator for E826		SS304	1	INTERIS
19	B814	Vapor Separator for E814		SS304	1	INTERIS

Plate Heat Exchangers –

Sr. No.	Tag ID	Designation	Technical Details	MOC	Qty	Supplier
1	E801	RS heater	Type: PHE	SS316	1	INTERIS
2	E802	RS heater II	Type: PHE	SS316	1	INTERIS
3	E831	Alcohol purge heater	Type: PHE	SS316	1	INTERIS
4	E806	Seal Water Cooler	Type: PHE	SS316	1	INTERIS

Mechanical Equipment –

Sr. No.	Tag ID	Designation	Technical Details	MOC	Qty	Supplier
1	PV820 A/B	Vacuum pumps		SS304	1+1	INTERIS
2	P801 A/B	RS inlet pumps-	Type: Centrifugal, Single Mechanical Seal	SS304	1+1	INTERIS
3	P810 A/B	Steam condensate pumps	Type: Centrifugal, Single Mechanical Seal	SS304	1+1	CLIENT
4	P813	Pump for E813 circulation	Type: Centrifugal, Single Mechanical Seal	SS304	1	INTERIS

5	P825 A/B	Alcohol purge pumps-	Type: Centrifugal, Double Mechanical Seal	SS304	1+1	INTERIS
6	P830 A/B	Bioethanol pumps-	Type: Centrifugal, Single Mechanical Seal	SS304	1+1	INTERIS
7	P831	Bioethanol to Storage	Type: Centrifugal, Single Mechanical Seal	SS304	1	INTERIS
8		Electrical & Instrumentation			Lot	INTERIS
9		Piping, Valves and Pipe Fittings			Lot	INTERIS

CHEMICAL TANKS AND MECHANICAL EQUIPMENT:

Sheet Metal Equipment –

Sr. No.	Tag ID	Designation	Technical Details	MOC	Qty	Supplier
1	R 351	Acid tank- Horizontal tank	Thk – 6	CS	1	INTERIS
2	R 352	Deviscosifying agent buffer tank (If required)	Thk – 4	SS304	1	INTERIS
3	R 354 / 355	Enzyme Tanks	Thk – 4	SS304	2	INTERIS
4	R 453	Antifoam tank	Thk – 4	SS304	1	INTERIS
5	R 457	Concentrated Soda tank	Thk – 4 / 5	SS304	1	INTERIS
6	R458	Hot water tank	Thk – 6 / 5	SS304	1	INTERIS
7	R459	Diluted caustic soda tank	Thk – 6 / 5	SS304	1	INTERIS

Plate Heat Exchangers –

Sr. No.	Tag ID	Designation	Technical Details	MOC	Qty	Supplier
1	E 459	CIP heater	Type: PHE	SS316	1	INTERIS

Mechanical Equipment –

Sr. No.	Tag ID	Designation	Technical Details	MOC	Qty	Supplier
1	PD 351 A/B	Acid pumps	Plunger Pump	Hastelloy	1+1	INTERIS
2	PD 352	Pump for Deviscosifying agent	Type - Dosing Pump	SS304	1	INTERIS
3	PD 353	Enzymes pumps	Type – Dosing Pump	SS304	1	INTERIS
4	PD 354	Enzymes pumps	Type – Dosing Pump	SS304	1	INTERIS
5	PD 355	Enzymes pumps	Type – Dosing Pump	SS304	1	INTERIS
6	P453 A/B	Antifoam pumps	Type - Centrifugal Double Mechanical Seal	SS304	1+1	INTERIS
7	P 457A/B	Concentrated Soda pump	Type - Centrifugal Double Mechanical Seal	SS304	1+1	INTERIS
8	P 458 A/B	Hot water pump	Type - Centrifugal Single Mechanical Seal	SS304	1+1	INTERIS
9	P 459 A/B	Diluted caustic pump	Type - Centrifugal Double Mechanical Seal	SS304	1+1	INTERIS

NOTE: 1. *The above equipment sizing may vary during the detailed engineering.*

2. *During project execution, these equipment lists can be modified by INTERIS if there is a need for further process optimization.*

DDGS Drying (section 900): CLIENT SCOPE

UTILITIES (Section 1000):

CONDENSATE POLISHING UNIT (CPU + ETP): ZLD Process

Designation	Quantity.	SITE/SHOP/BO	Supplier
Bar Screen	1 No	BO	INTERIS
Air Blower	1 No	BO	INTERIS
Settling Tank Feed Pump	1 No	BO	INTERIS
Coagulant / Flocculant Dosing Pump	2 No	BO	INTERIS
Coagulant / Flocculant Dosing Pump	2 No	BO	INTERIS
PSF Feed Pump	1 No	BO	INTERIS
Pressure Sand Filter	1 No	BO	INTERIS
Oxidant Dosing Pump	3 No	BO	INTERIS
Booster Pump	3 No	BO	INTERIS
Reactor Feed Pump	3 No	BO	INTERIS
Bag Filter	3 No	BO	INTERIS
Ozonator with O2 Concentrator	3 No	BO	INTERIS
Ozone Injection Pump	3 No	BO	INTERIS
Adaxy Reactor Pump	3 No	BO	INTERIS
UV Unit	3 lot	BO	INTERIS
Activated Carbon Filter	3 No	BO	INTERIS
Filter Backwash Pump	1 No	BO	INTERIS
RO Feed Pump	2 Nos	BO	INTERIS
Cartridge Filter	1 No	BO	INTERIS
RO High Pressure Pump	2 Nos	BO	INTERIS
RO Skid	1 No	BO	INTERIS
SMBS Dosing Tank	1 No	BO	INTERIS
SMBS Dosing Pump	1 No	BO	INTERIS
Antiscalant Dosing Tank	1 No	BO	INTERIS
Antiscalant Dosing Pump	1 No	BO	INTERIS
Caustic Dosing Tank	1 No	BO	INTERIS
Caustic Dosing Pump	1 No	BO	INTERIS

Instruments: Pressure Gauges bourdon type, Rotameter, Level Switches, Pressure Switches & Solenoid Valves etc	3 Lot	BO	INTERIS
LCP Panel & Cabling	3 Lot	BO	INTERIS
Piping & Valves	3 Lot	BO	INTERIS
Pipes & Cable Trays & Support	3 Lot	BO	INTERIS
Instruments	3 Lot	BO	INTERIS

NOTE – The above equipment list will change as per the recommended supplier.

Utilities:

Sr. No.	Tag ID	Designation	Technical Details	MOC	Qty	Supplier
1	CA 1000 A/B	Instrument Air Compressor			1+1	INTERIS

Cooling Tower:

Sr. No.	Tag ID	Designation	Technical Details	MOC	Qty	Supplier
1	CT 1001	Cooling tower (Fermentation)	Induced draft circulation		1	INTERIS
2	CT 1002	Cooling tower (Other process units)	Induced draft circulation		1	INTERIS
3	P 1001 A/B	Fermentation cooling water circulation pump- Gland Pack	Centrifugal	CI	2w+1s	INTERIS
4	P 1002 A/B	Distillation and Liquefaction cooling water circulation pump- Gland Pack	Centrifugal	CI	1w+1s	INTERIS
5	P 1002 C/D	Dehydration and Evaporation cooling water circulation pump - Gland Pack	Centrifugal	CI	1w+1s	INTERIS
6	R 1016 A/B	Chemical Dosing for cooling tower- tank		FRP	2	INTERIS
7	PD 1016 A/B	Dosing pump for CT	Centrifugal	CI	2	INTERIS

Receiver and Storage:

Sr. No.	Tag ID	Designation	Technical Details	MOC	Qty	Supplier
1	R 1011 A/B/C	AA daily Receivers		CS	3	INTERIS
2	R 1012 A/B	AA Bulk Storage tank		CS	2	INTERIS
3	R 1013	Fusel Oil Storage		SS304	1	INTERIS
4	R1014 A/B	Ethanol Issue cum denaturant tank		CS	2	INTERIS
5	R1015	IS storage Tank		CS	1	INTERIS
6	E 1011 A/B/C	Condenser's	Type – Shell & Tube	SS	3	INTERIS
7	E 1012 A/B	Condenser's	Type – Shell & Tube	SS	2	INTERIS
8	P 1011 A/B	Ethanol receiver transfer Pump- Single Mechanical Seal	Type – Centrifugal Single Mechanical Seal		1+1	INTERIS
9	P 1012 A/B	Ethanol Bulk Storage Transfer Pumps	Type – Centrifugal Single Mechanical Seal		1+1	INTERIS
10	P 1013	Fusel oil Storage transfer pump	Type – Centrifugal Single Mechanical Seal		1	INTERIS
			Type – Centrifugal Single Mechanical		1+1	INTERIS

11	P 1014 A/B	Ethanol loading/Issue pumps	Seal			
12	P 1015	IS storage transfer pump	Type – Centrifugal Single Mechanical Seal		1	INTERIS
13	FT 1014 A/B	PD flow meter with totalizer for issue to be approved by Weight. & Measure Dept.	Positive Displacement type		2	INTERIS
14		Anti-Fire vacuum valve	Flame Arrester		5	INTERIS
15		Instrument for receiver & storage			Set	INTERIS
16		Process Control Instrument connected to DCS			1 set	INTERIS

NOTE – During the project execution, these equipment list can be modified by the INTERIS if there is a need for further process optimization.

ANNEXURE-12

GREENERGY PURE ETHANOL PRIVATE LIMITED

Regd. Off: No.324, Golden Point 4, Off. Queens Road Cross, Vasant Nagar, Bengaluru 560052, KA, IN
Ph: 080- 49222220 II **Email:** cs@goldengrp.co.in II **CIN:** U24200KA2022PTC163272

GPEPL/TN/LTR-06/WW/24-25 **Date: 19-09-2024**

To,
The Chief Engineer,
Water Resources Department,
Trichy Region,
Trichy 600 020

Sub.: Request of Approval for withdrawal of water from Cauvery river for the upcoming Ethanol factory at Kumara Mangalam Village – Kulithalai Tehsil-Karur District, Tamilnadu. – Reg.,

Dear Sir,

We are having our own land of 35 acres at Kumara Mangalam Village, Kulithalai Tehsil – Karur District and in that we are planning to construct a Zero discharge Pure Ethanol Plant of 600KLPD. From this we are planning to provide local employment for 600 - 800 peoples here.

For the same we have made the payment of Rs. 15 Lakhs in the Tamil Nadu Government Single Window Portal (Copy attached) Ref. CAF : 153772, Dtd.: 20-06-2024.

For our day to day operations we are in need of 25 Lakh litres of water daily and we hereby request you to approve us to withdraw the required water from the Cauvery river which is 700 mtrs. from our planned site.

We request you to consider our proposal for which we will be very helpful and we will follow the government guidelines and will submit the necessary documents for granting the approval.

The total investment planned for this project is approx..600 Cr. We seek your support in this matter please.

Thanking You,

Your's faithfully,

For Greenergy Pure Ethanol Pvt. Ltd.

Authorised Signatory

தலைமை பொறியாளர் அலுவலகம்
திருச்சி மண்டலம்
19 SEP 2024
நீர்வளத் திருச்சிராப்பள்ளி

Sir, Copy received

19/9/24

ANNEXURE-13

AMBIENT AIR QUALITY MONITORING RESULTS

Project Site													
MONTH	**DATE**	**PM_{10}**	**$PM_{2.5}$**	**SO_2**	**NO_2**	**Ni**	**Pb**	**As**	**CO**	**O3**	**NH_3**	**C_6H_6**	**BaP**
October	01/10/2024	48.2	20.6	10.42	11.15	BDL	BDL	BDL	0.97	14.06	6.42	BDL	BDL
	04/10/2024	46.7	19.1	10.30	8.02	BDL	BDL	BDL	0.91	13.40	6.85	BDL	BDL
	07/10/2024	45.1	17.3	9.51	10.58	BDL	BDL	BDL	0.86	12.94	7.12	BDL	BDL
	10/10/2024	49.8	20.2	9.84	10.42	BDL	BDL	BDL	0.95	13.81	6.61	BDL	BDL
	16/10/2024	51.0	21.4	10.06	11.76	BDL	BDL	BDL	0.98	14.52	6.38	BDL	BDL
	19/10/2024	47.3	18.5	9.35	10.71	BDL	BDL	BDL	1.02	13.93	7.05	BDL	BDL
	22/10/2024	45.9	17.8	8.98	9.75	BDL	BDL	BDL	0.80	13.15	7.24	BDL	BDL
	25/10/2024	50.4	21.1	9.74	10.60	BDL	BDL	BDL	0.92	13.74	6.15	BDL	BDL
November	04/11/2024	47.0	17.2	9.26	10.15	BDL	BDL	BDL	0.78	13.20	7.29	BDL	BDL
	07/11/2024	51.3	22.0	9.60	10.83	BDL	BDL	BDL	0.88	14.49	6.30	BDL	BDL
	12/11/2024	46.6	18.6	8.94	9.80	BDL	BDL	BDL	0.75	12.30	6.87	BDL	BDL
	15/11/2024	49.2	19.9	9.15	11.12	BDL	BDL	BDL	0.79	13.75	6.15	BDL	BDL
	20/11/2024	52.0	19.4	9.86	11.29	BDL	BDL	BDL	0.86	14.02	6.42	BDL	BDL
	23/11/2024	47.7	17.3	9.01	10.40	BDL	BDL	BDL	0.81	13.92	7.31	BDL	BDL
	26/11/2024	50.8	20.5	9.59	10.32	BDL	BDL	BDL	0.90	13.18	6.50	BDL	BDL
	29/11/2024	52.6	22.4	10.11	11.67	BDL	BDL	BDL	0.97	14.36	6.24	BDL	BDL
December	02/12/2024	49.9	18.6	9.35	10.06	BDL	BDL	BDL	0.92	13.49	6.72	BDL	BDL
	05/12/2024	46.3	17.1	8.84	9.91	BDL	BDL	BDL	0.84	12.46	7.40	BDL	BDL
	10/12/2024	48.0	19.5	9.21	10.15	BDL	BDL	BDL	0.87	12.98	6.53	BDL	BDL
	13/12/2024	50.1	20.4	9.8	10.58	BDL	BDL	BDL	0.94	13.11	6.24	BDL	BDL
	16/12/2024	47.5	18.0	9.52	11.47	BDL	BDL	BDL	0.8	14.35	7.05	BDL	BDL
	20/12/2024	45.8	16.9	8.73	10.32	BDL	BDL	BDL	0.75	12.93	7.28	BDL	BDL
	24/12/2024	49	19.9	9.19	11.74	BDL	BDL	BDL	0.77	14.07	6.61	BDL	BDL
	28/12/2024	51.4	21.3	9.85	10.6	BDL	BDL	BDL	0.83	12.7	6.3	BDL	BDL

Ayyampalayam													
MONTH	**DATE**	**PM10**	**PM2.5**	**SO_2**	**NO_2**	**Ni**	**Pb**	**As**	**CO**	**O3**	**NH3**	**C6H6**	**BaP**
October	01/10/2024	53.5	22.4	10.95	12.26	BDL	BDL	BDL	1.11	14.72	6.83	BDL	BDL
	04/10/2024	51.4	21.3	10.69	9.17	BDL	BDL	BDL	1.06	13.66	7.32	BDL	BDL
	07/10/2024	49.9	19.5	10.38	13.04	BDL	BDL	BDL	0.97	15.08	7.46	BDL	BDL
	10/10/2024	52.3	23.8	11.16	14.15	BDL	BDL	BDL	1.04	15.34	6.70	BDL	BDL
	16/10/2024	54.2	24.2	11.42	13.98	BDL	BDL	BDL	1.15	14.48	6.95	BDL	BDL
	19/10/2024	49.7	21.6	10.87	13.34	BDL	BDL	BDL	0.96	14.71	7.18	BDL	BDL
	22/10/2024	48.0	19.0	9.91	12.40	BDL	BDL	BDL	0.94	13.80	7.41	BDL	BDL
	25/10/2024	53.3	22.7	10.30	11.89	BDL	BDL	BDL	1.19	14.02	6.80	BDL	BDL
November	04/11/2024	49.6	20.8	9.97	10.71	BDL	BDL	BDL	0.91	13.71	7.51	BDL	BDL
	07/11/2024	55.8	24.6	10.52	13.28	BDL	BDL	BDL	1.09	15.24	6.63	BDL	BDL
	12/11/2024	48.9	19.4	9.73	11.15	BDL	BDL	BDL	0.87	13.46	7.42	BDL	BDL
	15/11/2024	52.4	21.3	10.16	12.55	BDL	BDL	BDL	0.93	14.48	6.48	BDL	BDL
	20/11/2024	56.7	24.5	11.15	14.05	BDL	BDL	BDL	1.01	15.39	6.31	56.7	BDL
	23/11/2024	51.4	19.1	10.32	13.06	BDL	BDL	BDL	0.95	14.60	6.95	BDL	BDL
	26/11/2024	53.6	23.9	10.48	12.70	BDL	BDL	BDL	0.99	13.93	6.74	BDL	BDL
	29/11/2024	55.9	25.3	11.51	13.61	BDL	BDL	BDL	1.08	15.28	6.55	BDL	BDL
December	02/12/2024	51	19.9	9.94	10.93	BDL	BDL	BDL	0.95	12.83	6.96	BDL	BDL
	05/12/2024	49.2	19.2	9.30	10.18	BDL	BDL	BDL	0.89	13.79	7.48	BDL	BDL
	10/12/2024	50.8	20.7	9.41	11.60	BDL	BDL	BDL	0.92	14.2	6.60	BDL	BDL
	13/12/2024	53	23.1	10.58	12.04	BDL	BDL	BDL	0.98	13.49	6.82	BDL	BDL
	16/12/2024	48.8	20.4	10.05	13.18	BDL	BDL	BDL	0.86	14.62	7.59	BDL	BDL
	20/12/2024	47.1	18.5	9.93	11.70	BDL	BDL	BDL	0.82	13.1	7.67	BDL	BDL
	24/12/2024	53.5	21.8	10.16	13.42	BDL	BDL	BDL	0.93	14.44	6.73	BDL	BDL
	28/12/2024	56.4	24.6	10.8	12.84	BDL	BDL	BDL	1.1	13.69	6.51	BDL	BDL

Kollukattipalayam													
MONTH	**DATE**	**PM10**	**PM2.5**	**SO_2**	**NO_2**	**Ni**	**Pb**	**As**	**CO**	**O3**	**NH3**	**C6H6**	**BaP**
October	01/10/2024	50.5	20.1	10.46	13.08	BDL	BDL	BDL	0.86	14.25	6.59	BDL	BDL
	04/10/2024	48.9	19.5	10.15	8.71	BDL	BDL	BDL	0.79	12.93	7.06	BDL	BDL
	07/10/2024	51.7	21.2	10.65	12.48	BDL	BDL	BDL	0.85	13.60	6.68	BDL	BDL
	10/10/2024	48.7	18.7	10.40	13.35	BDL	BDL	BDL	0.74	14.22	7.19	BDL	BDL
	16/10/2024	52.4	23.0	10.81	13.59	BDL	BDL	BDL	0.81	15.01	6.70	BDL	BDL
	19/10/2024	48.5	19.4	9.83	11.24	BDL	BDL	BDL	0.70	13.19	7.42	BDL	BDL
	22/10/2024	50.2	20.7	9.16	10.51	BDL	BDL	BDL	0.88	12.48	7.15	BDL	BDL
	25/10/2024	51.0	21.3	9.36	10.80	BDL	BDL	BDL	0.95	12.57	7.01	BDL	BDL
November	04/11/2024	52.9	23.1	10.68	13.33	BDL	BDL	BDL	0.98	15.24	6.72	BDL	BDL
	07/11/2024	54.1	21.8	11.20	13.67	BDL	BDL	BDL	1.07	14.90	6.54	BDL	BDL
	12/11/2024	49.7	17.7	10.35	12.18	BDL	BDL	BDL	0.93	13.83	7.38	BDL	BDL
	15/11/2024	50.5	20.2	9.75	10.85	BDL	BDL	BDL	0.90	12.76	6.60	BDL	BDL
	20/11/2024	54.9	22.6	11.49	13.50	BDL	BDL	BDL	0.97	14.62	6.49	BDL	BDL
	23/11/2024	48.4	18.0	9.71	11.04	BDL	BDL	BDL	0.77	12.51	7.11	BDL	BDL
	26/11/2024	51.5	20.7	10.14	12.49	BDL	BDL	BDL	0.84	13.96	7.01	BDL	BDL
	29/11/2024	54.0	24.0	10.80	13.14	BDL	BDL	BDL	0.96	14.05	6.80	BDL	BDL
December	02/12/2024	47.2	17.5	9.27	10.6	BDL	BDL	BDL	0.81	12.14	7.35	BDL	BDL
	05/12/2024	48.0	18.3	9.01	10.92	BDL	BDL	BDL	0.85	13.05	7.21	BDL	BDL
	10/12/2024	46.9	16.6	8.45	9.79	BDL	BDL	BDL	0.71	11.98	7.48	BDL	BDL
	13/12/2024	51.8	19	9.62	10.67	BDL	BDL	BDL	0.78	12.85	6.57	BDL	BDL
	16/12/2024	50.1	17.2	9.72	11.34	BDL	BDL	BDL	0.69	13.72	6.43	BDL	BDL
	20/12/2024	46.0	16.3	9.13	10.95	BDL	BDL	BDL	0.65	12.49	7.35	BDL	BDL
	24/12/2024	52.2	19.4	9.50	12.19	BDL	BDL	BDL	0.78	13.95	6.18	BDL	BDL
	28/12/2024	53.7	22.8	10.47	11.86	BDL	BDL	BDL	0.87	14.18	6.42	BDL	BDL

Musiri													
MONTH	**DATE**	**PM10**	**PM2.5**	**SO_2**	**NO_2**	**Ni**	**Pb**	**As**	**CO**	**O3**	**NH3**	**C6H6**	**BaP**
October	01/10/2024	56.4	24.0	12.04	14.20	BDL	BDL	BDL	1.05	14.60	6.68	BDL	BDL
	04/10/2024	54.7	21.7	11.68	9.74	BDL	BDL	BDL	0.96	13.51	6.92	BDL	BDL
	07/10/2024	57.9	24.3	10.95	11.70	BDL	BDL	BDL	1.09	14.12	6.40	BDL	BDL
	10/10/2024	53.5	22.4	10.06	12.49	BDL	BDL	BDL	1.03	13.47	6.78	BDL	BDL
	16/10/2024	57.6	25.1	11.52	13.61	BDL	BDL	BDL	1.17	15.31	6.49	BDL	BDL
	19/10/2024	52.4	22.9	10.80	12.40	BDL	BDL	BDL	0.98	14.26	6.15	BDL	BDL
	22/10/2024	55.1	23.8	11.14	12.08	BDL	BDL	BDL	1.10	14.75	6.83	BDL	BDL
	25/10/2024	58.2	24.5	11.42	12.69	BDL	BDL	BDL	1.25	15.09	6.62	BDL	BDL
November	04/11/2024	60.1	25.0	11.71	13.48	BDL	BDL	BDL	1.05	15.61	6.42	BDL	BDL
	07/11/2024	56.7	23.9	10.90	12.96	BDL	BDL	BDL	0.93	15.29	7.05	BDL	BDL
	12/11/2024	52.0	20.7	10.69	11.83	BDL	BDL	BDL	0.89	14.45	6.81	BDL	BDL
	15/11/2024	55.3	22.8	11.24	12.77	BDL	BDL	BDL	1.12	14.60	6.52	BDL	BDL
	20/11/2024	57.8	23.4	10.97	13.14	BDL	BDL	BDL	1.19	13.82	6.18	BDL	BDL
	23/11/2024	52.9	20.5	10.45	11.91	BDL	BDL	BDL	0.86	12.93	6.79	BDL	BDL
	26/11/2024	54.0	24.3	10.89	12.38	BDL	BDL	BDL	0.95	14.05	6.46	BDL	BDL
	29/11/2024	54.8	25.1	11.44	13.46	BDL	BDL	BDL	1.10	15.39	6.97	BDL	BDL
December	02/12/2024	53.2	21.4	10.35	11.49	BDL	BDL	BDL	0.88	13.95	6.48	BDL	BDL
	05/12/2024	55.1	24.9	10.96	12.79	BDL	BDL	BDL	0.96	14.48	6.19	BDL	BDL
	10/12/2024	51.6	20.1	10.04	11.26	BDL	BDL	BDL	0.9	12.48	6.93	BDL	BDL
	13/12/2024	54.8	25.2	10.68	13.16	BDL	BDL	BDL	1.05	14.62	6.40	BDL	BDL
	16/12/2024	53.0	23.5	11.13	12.90	BDL	BDL	BDL	1.09	13.15	6.27	BDL	BDL
	20/12/2024	51.5	22.6	10.6	11.75	BDL	BDL	BDL	0.92	12.97	6.75	BDL	BDL
	24/12/2024	56.4	24.8	10.81	12.31	BDL	BDL	BDL	1.15	13.42	6.31	BDL	BDL
	28/12/2024	58.3	25	11.24	12.57	BDL	BDL	BDL	1.18	13.60	6.14	BDL	BDL

Karuppampatti													
MONTH	**DATE**	**PM10**	**PM2.5**	**SO_2**	**NO_2**	**Ni**	**Pb**	**As**	**CO**	**O3**	**NH3**	**C6H6**	**BaP**
October	01/10/2024	58.0	25.2	12.40	12.19	BDL	BDL	BDL	1.16	13.68	7.05	BDL	BDL
	04/10/2024	56.2	23.6	11.08	9.06	BDL	BDL	BDL	1.12	13.05	7.31	BDL	BDL
	07/10/2024	59.1	25.5	11.86	12.46	BDL	BDL	BDL	1.24	13.91	6.87	BDL	BDL
	10/10/2024	55.0	23.1	10.73	11.72	BDL	BDL	BDL	1.09	12.84	7.13	BDL	BDL
	16/10/2024	58.4	26.0	12.42	13.48	BDL	BDL	BDL	1.20	14.75	6.75	BDL	BDL
	19/10/2024	54.2	24.3	11.19	12.83	BDL	BDL	BDL	1.12	13.70	6.92	BDL	BDL
	22/10/2024	57.6	25.7	12.35	13.15	BDL	BDL	BDL	1.22	14.20	7.33	BDL	BDL
	25/10/2024	59.9	26.9	12.61	13.70	BDL	BDL	BDL	1.30	14.58	7.18	BDL	BDL
November	04/11/2024	58.0	23.4	10.93	11.93	BDL	BDL	BDL	1.18	12.75	6.97	BDL	BDL
	07/11/2024	59.5	25.8	11.10	12.52	BDL	BDL	BDL	1.21	13.86	6.61	BDL	BDL
	12/11/2024	55.0	22.9	10.86	11.80	BDL	BDL	BDL	1.03	12.44	7.19	BDL	BDL
	15/11/2024	57.7	24.0	11.49	13.29	BDL	BDL	BDL	0.96	14.01	6.81	BDL	BDL
	20/11/2024	59.3	25.6	12.22	14.02	BDL	BDL	BDL	1.12	14.45	6.37	BDL	BDL
	23/11/2024	53.8	21.7	10.80	11.85	BDL	BDL	BDL	0.91	13.29	6.82	BDL	BDL
	26/11/2024	56.2	23.0	11.54	12.74	BDL	BDL	BDL	1.03	13.81	6.75	BDL	BDL
	29/11/2024	59.3	26.4	12.40	13.60	BDL	BDL	BDL	1.22	14.32	6.40	BDL	BDL
December	02/12/2024	55.5	22.7	11.33	12.41	BDL	BDL	BDL	0.96	14.68	6.32	BDL	BDL
	05/12/2024	57.6	25.6	11.75	12.68	BDL	BDL	BDL	1.02	14.62	6.05	BDL	BDL
	10/12/2024	53.8	23.1	11.17	12.49	BDL	BDL	BDL	0.94	13.7	6.81	BDL	BDL
	13/12/2024	56.4	24.9	12.49	13.51	BDL	BDL	BDL	1.17	14.95	6.75	BDL	BDL
	16/12/2024	57.1	25.2	12.72	14.14	BDL	BDL	BDL	1.2	15.24	6.5	BDL	BDL
	20/12/2024	54	24.4	11.54	12.70	BDL	BDL	BDL	1.08	13.6	7.09	BDL	BDL
	24/12/2024	58.2	25.7	12.04	13.95	BDL	BDL	BDL	1.18	14.78	6.6	BDL	BDL
	28/12/2024	59.7	26.3	12.31	14.07	BDL	BDL	BDL	1.26	15.24	6.27	BDL	BDL

Kuchipatti													
MONTH	**DATE**	**PM10**	**PM2.5**	**SO_2**	**NO_2**	**Ni**	**Pb**	**As**	**CO**	**O3**	**NH3**	**C6H6**	**BaP**
October	01/10/2024	57.1	21.8	11.11	12.40	BDL	BDL	BDL	1.13	13.97	6.91	BDL	BDL
	04/10/2024	55.7	22.2	10.94	9.40	BDL	BDL	BDL	1.08	13.76	7.13	BDL	BDL
	07/10/2024	58.0	23.7	11.32	12.83	BDL	BDL	BDL	1.19	14.00	6.72	BDL	BDL
	10/10/2024	53.9	20.6	10.91	11.82	BDL	BDL	BDL	1.26	13.51	7.45	BDL	BDL
	16/10/2024	56.6	24.3	11.48	13.17	BDL	BDL	BDL	1.06	14.42	6.86	BDL	BDL
	19/10/2024	52.0	21.9	10.60	13.09	BDL	BDL	BDL	0.95	14.65	7.51	BDL	BDL
	22/10/2024	55.4	23.8	10.47	13.49	BDL	BDL	BDL	0.99	14.92	7.01	BDL	BDL
	25/10/2024	57.0	25.2	12.05	14.11	BDL	BDL	BDL	1.04	15.11	6.60	BDL	BDL
November	04/11/2024	56.3	21.2	11.44	12.87	BDL	BDL	BDL	1.12	13.48	7.24	BDL	BDL
	07/11/2024	58.7	24.4	11.50	13.19	BDL	BDL	BDL	1.29	14.02	6.98	BDL	BDL
	12/11/2024	53.0	20.6	10.67	12.42	BDL	BDL	BDL	0.95	13.51	7.37	BDL	BDL
	15/11/2024	54.8	21.3	10.93	12.50	BDL	BDL	BDL	0.97	14.79	7.15	BDL	BDL
	20/11/2024	57.6	24.5	11.49	13.49	BDL	BDL	BDL	1.14	15.20	6.68	BDL	BDL
	23/11/2024	52.4	19.9	10.31	12.46	BDL	BDL	BDL	1.01	13.71	6.97	BDL	BDL
	26/11/2024	53.8	20.7	10.40	13.21	BDL	BDL	BDL	1.07	14.40	6.80	BDL	BDL
	29/11/2024	57.5	24.8	11.52	13.47	BDL	BDL	BDL	1.19	14.68	6.55	BDL	BDL
December	02/12/2024	53.2	20.5	10.5	11.75	BDL	BDL	BDL	0.91	13.03	7.13	BDL	BDL
	05/12/2024	55	23	10.19	11.40	BDL	BDL	BDL	0.97	12.85	6.82	BDL	BDL
	10/12/2024	51.7	19.7	9.94	10.93	BDL	BDL	BDL	0.88	12.44	7.4	BDL	BDL
	13/12/2024	54.8	23.3	10.67	11.63	BDL	BDL	BDL	1.03	13.36	6.9	BDL	BDL
	16/12/2024	56.3	24.1	11.18	12.49	BDL	BDL	BDL	1.12	14.49	6.71	BDL	BDL
	20/12/2024	52.6	22.8	10.76	11.88	BDL	BDL	BDL	0.96	13.18	7.15	BDL	BDL
	24/12/2024	55.5	23.9	11.4	12.16	BDL	BDL	BDL	1.09	13.65	6.82	BDL	BDL
	28/12/2024	57.7	25.5	11.85	13.24	BDL	BDL	BDL	1.14	14.47	6.53	BDL	BDL

Panikampatti													
MONTH	**DATE**	**PM10**	**PM2.5**	**SO_2**	**NO_2**	**Ni**	**Pb**	**As**	**CO**	**O3**	**NH3**	**C6H6**	**BaP**
October	01/10/2024	47.2	19.5	10.40	11.05	BDL	BDL	BDL	0.88	12.49	6.58	BDL	BDL
	04/10/2024	44.5	18.8	10.05	8.14	BDL	BDL	BDL	0.80	11.57	6.02	BDL	BDL
	07/10/2024	48.8	19.1	9.61	10.68	BDL	BDL	BDL	0.91	11.83	5.95	BDL	BDL
	10/10/2024	45.1	16..8	8.78	10.42	BDL	BDL	BDL	0.73	12.60	6.41	BDL	BDL
	16/10/2024	47.3	17.2	19.9.16	10.90	BDL	BDL	BDL	0.77	13.55	5.75	BDL	BDL
	19/10/2024	49.9	18.5	9.55	11.11	BDL	BDL	BDL	0.84	13.72	6.34	BDL	BDL
	22/10/2024	50.7	20.3	9.92	11.30	BDL	BDL	BDL	0.95	13.06	6.82	BDL	BDL
	25/10/2024	46.2	16.6	8.91	10.16	BDL	BDL	BDL	0.70	12.41	6.15	BDL	BDL
November	04/11/2024	43.8	15.9	8.57	10.93	BDL	BDL	BDL	0.66	12.82	6.81	BDL	BDL
	07/11/2024	45.9	16.7	9.10	10.80	BDL	BDL	BDL	0.72	13.15	6.50	BDL	BDL
	12/11/2024	42.0	14.0	8.64	10.47	BDL	BDL	BDL	0.65	12.49	6.38	BDL	BDL
	15/11/2024	43.1	15.2	8.71	11.17	BDL	BDL	BDL	0.69	13.42	6.01	BDL	BDL
	20/11/2024	48.4	18.0	9.24	10.62	BDL	BDL	BDL	0.82	12.89	6.24	BDL	BDL
	23/11/2024	46.0	16.9	9.06	10.16	BDL	BDL	BDL	0.73	13.08	6.67	BDL	BDL
	26/11/2024	47.7	17.7	9.47	10.93	BDL	BDL	BDL	0.78	14.12	6.54	BDL	BDL
	29/11/2024	50.2	20.5	10.11	11.70	BDL	BDL	BDL	0.80	13.80	6.10	BDL	BDL
December	02/12/2024	45	17	9.74	10.5	BDL	BDL	BDL	0.71	12.2	6.35	BDL	BDL
	05/12/2024	47.3	17.8	9.98	11.19	BDL	BDL	BDL	0.76	12.46	6.7	BDL	BDL
	10/12/2024	44.2	15.7	9.17	11.4	BDL	BDL	BDL	0.63	12.75	6.92	BDL	BDL
	13/12/2024	47.5	18.2	9.52	10.83	BDL	BDL	BDL	0.67	12.19	6.41	BDL	BDL
	16/12/2024	49.0	19	10.34	12.07	BDL	BDL	BDL	0.78	13.68	6.24	BDL	BDL
	20/12/2024	42.2	16.4	10.25	12.7	BDL	BDL	BDL	0.62	13.5	6.89	BDL	BDL
	24/12/2024	44.4	17.3	10.59	12.64	BDL	BDL	BDL	0.68	14.02	6.57	BDL	BDL
	28/12/2024	47.8	19.5	10.95	13.49	BDL	BDL	BDL	0.85	14.75	5.84	BDL	BDL

Karungalpatti													
MONTH	**DATE**	**PM10**	**PM2.5**	**SO_2**	**NO_2**	**Ni**	**Pb**	**As**	**CO**	**O3**	**NH3**	**C6H6**	**BaP**
October	01/10/2024	50.2	21.9	10.95	12.99	BDL	BDL	BDL	0.83	13.54	6.42	BDL	BDL
	04/10/2024	47.4	20.3	10.69	8.94	BDL	BDL	BDL	0.75	12.09	6.21	BDL	BDL
	07/10/2024	49.5	22.4	10.48	11.89	BDL	BDL	BDL	0.87	12.48	6.01	BDL	BDL
	10/10/2024	46	19.7	9.85	10.50	BDL	BDL	BDL	0.79	12.14	5.57	BDL	BDL
	16/10/2024	48..3	20.4	10.29	11.38	BDL	BDL	BDL	0.81	13.70	5.93	BDL	BDL
	19/10/2024	50.8	22.1	10.51	12.19	BDL	BDL	BDL	0.88	14.01	5.72	BDL	BDL
	22/10/2024	51.1	23.2	10.09	10.06	BDL	BDL	BDL	0.93	12.04	5.48	BDL	BDL
	25/10/2024	45.6	18.9	9.33	10.48	BDL	BDL	BDL	0.82	12.57	6.82	BDL	BDL
November	04/11/2024	46.2	17.7	9.18	10.17	BDL	BDL	BDL	0.79	13.18	6.68	BDL	BDL
	07/11/2024	47.9	18.2	9.60	11.19	BDL	BDL	BDL	0.78	12.82	6.24	BDL	BDL
	12/11/2024	44.2	16.1	8.95	10.14	BDL	BDL	BDL	0.67	11.78	6.66	BDL	BDL
	15/11/2024	48.3	17.3	9.44	10.85	BDL	BDL	BDL	0.71	12.19	6.45	BDL	BDL
	20/11/2024	50.5	19.2	9.72	11.08	BDL	BDL	BDL	0.77	13.09	5.97	BDL	BDL
	23/11/2024	47.2	18.5	9.16	10.62	BDL	BDL	BDL	0.78	12.61	6.15	BDL	BDL
	26/11/2024	51.3	19.8	9.55	11.05	BDL	BDL	BDL	0.84	13.15	5.82	BDL	BDL
	29/11/2024	52.9	21.7	9.63	10.92	BDL	BDL	BDL	0.89	12.87	5.73	BDL	BDL
December	02/12/2024	47.7	18.3	9.98	11.15	BDL	BDL	BDL	0.73	13.26	6.05	BDL	BDL
	05/12/2024	49	19.4	10.06	11.4	BDL	BDL	BDL	0.8	12.74	5.67	BDL	BDL
	10/12/2024	45.1	16.6	9.52	10.19	BDL	BDL	BDL	0.69	12.50	6.48	BDL	BDL
	13/12/2024	50.3	20.7	9.73	10.37	BDL	BDL	BDL	0.72	12.81	6.63	BDL	BDL
	16/12/2024	52.2	22.4	10.12	11.29	BDL	BDL	BDL	0.83	13.19	6.12	BDL	BDL
	20/12/2024	44	18.2	10.46	12.14	BDL	BDL	BDL	0.65	13.73	6.7	BDL	BDL
	24/12/2024	46.8	20	10.52	13.01	BDL	BDL	BDL	0.74	14.45	6.24	BDL	BDL
	28/12/2024	49.1	21.6	11.15	13.62	BDL	BDL	BDL	0.82	15.04	6.15	BDL	BDL

Adinattam													
MONTH	**DATE**	**PM10**	**PM2.5**	**SO_2**	**NO_2**	**Ni**	**Pb**	**As**	**CO**	**O3**	**NH3**	**C6H6**	**BaP**
October	01/10/2024	56.0	20.4	11.42	12.49	BDL	BDL	BDL	0.96	14.10	6.49	BDL	BDL
	04/10/2024	53.4	22.9	11.13	11.52	BDL	BDL	BDL	0.87	13.18	6.60	BDL	BDL
	07/10/2024	57.4	25.1	11.42	12.40	BDL	BDL	BDL	0.94	13.75	6.35	BDL	BDL
	10/10/2024	49.8	22.3	10.44	11.71	BDL	BDL	BDL	0.81	13.35	6.88	BDL	BDL
	16/10/2024	52.2	23.0	10.59	12.18	BDL	BDL	BDL	0.87	14.17	6.05	BDL	BDL
	19/10/2024	55.1	25.4	10.98	13.08	BDL	BDL	BDL	0.95	14.48	5.98	BDL	BDL
	22/10/2024	56.6	25.7	11.27	13.35	BDL	BDL	BDL	1.03	15.12	5.71	BDL	BDL
	25/10/2024	48.5	21.6	10.47	13.07	BDL	BDL	BDL	0.90	14.62	6.40	BDL	BDL
November	04/11/2024	49.7	19.5	10.60	10.80	BDL	BDL	BDL	0.79	13.18	6.68	BDL	BDL
	07/11/2024	51.3	20.9	10.80	11.75	BDL	BDL	BDL	0.84	13.58	6.12	BDL	BDL
	12/11/2024	46.5	18.3	9.56	10.60	BDL	BDL	BDL	0.72	12.15	7.05	BDL	BDL
	15/11/2024	50.9	21.5	10.05	11.13	BDL	BDL	BDL	0.77	12.83	6.20	BDL	BDL
	20/11/2024	54.0	23.8	11.17	12.19	BDL	BDL	0.86	0.86	13.47	6.45	BDL	BDL
	23/11/2024	52.6	20.4	10.49	10.58	BDL	BDL	BDL	0.71	12.39	6.38	BDL	BDL
	26/11/2024	55.7	22.0	11.74	12.49	BDL	BDL	BDL	0.92	13.70	6.17	BDL	BDL
	29/11/2024	56.8	24.5	12.08	13.88	BDL	BDL	BDL	0.97	14.21	5.95	BDL	BDL
December	02/12/2024	49.5	21.6	10.15	11.3	BDL	BDL	BDL	0.8	13.8	6.64	BDL	BDL
	05/12/2024	52.4	23.3	10.42	11.89	BDL	BDL	BDL	0.88	14.12	5.58	BDL	BDL
	10/12/2024	47	19.0	9.87	10.09	BDL	BDL	BDL	0.73	13.05	6.20	BDL	BDL
	13/12/2024	53.7	22.5	10.51	12.24	BDL	BDL	BDL	0.79	13.65	5.91	BDL	BDL
	16/12/2024	55	24.9	10.83	12.85	BDL	BDL	BDL	0.85	13.93	5.75	BDL	BDL
	20/12/2024	48.8	20.0	11.18	13.11	BDL	BDL	BDL	0.71	14.2	6.38	BDL	BDL
	24/12/2024	50.7	23.4	11.48	13.42	BDL	BDL	BDL	0.78	14.66	6.06	BDL	BDL
	28/12/2024	53.5	25	11.64	12.98	BDL	BDL	BDL	0.9	13.71	5.58	BDL	BDL

Kulithalai													
MONTH	**DATE**	**PM10**	**PM2.5**	**SO_2**	**NO_2**	**Ni**	**Pb**	**As**	**CO**	**O3**	**NH3**	**C6H6**	**BaP**
October	01/10/2024	47.1	20.3	10.31	11.70	BDL	BDL	BDL	0.66	12.95	6.65	BDL	BDL
	04/10/2024	45.6	19.4	10.20	8.25	BDL	BDL	BDL	0.70	12.64	6.32	BDL	BDL
	07/10/2024	49.3	21.0	10.90	11.09	BDL	BDL	BDL	0.75	13.09	5.80	BDL	BDL
	10/10/2024	45.2	18.6	9.72	10.69	BDL	BDL	BDL	0.62	12.48	6.19	BDL	BDL
	16/10/2024	46.0	17.7	9.81	10.13	BDL	BDL	BDL	0.73	13.35	6.45	BDL	BDL
	19/10/2024	48.4	19.5	10.05	11.37	BDL	BDL	BDL	0.78	14.02	6.01	BDL	BDL
	22/10/2024	50.3	20.4	10.49	12.18	BDL	BDL	BDL	0.85	12.47	5.83	BDL	BDL
	25/10/2024	45.7	18.1	9.71	10.93	BDL	BDL	BDL	0.74	12.80	6.71	BDL	BDL
November	04/11/2024	46.0	17.6	9.37	10.68	BDL	BDL	BDL	0.70	12.34	7.24	BDL	BDL
	07/11/2024	49.9	18.5	10.10	11.47	BDL	BDL	BDL	0.79	13.17	6.65	BDL	BDL
	12/11/2024	43.2	15.4	8.72	9.96	BDL	BDL	BDL	0.60	11.83	6.21	BDL	BDL
	15/11/2024	47.3	16.9	9.24	10.01	BDL	BDL	BDL	0.69	13.39	6.05	BDL	BDL
	20/11/2024	50.6	18.3	10.33	11.54	BDL	BDL	BDL	0.72	13.60	5.90	BDL	BDL
	23/11/2024	48.5	17.1	9.96	10.83	BDL	BDL	BDL	0.65	12.75	6.14	BDL	BDL
	26/11/2024	51.7	19.6	10.12	11.19	BDL	BDL	BDL	0.81	13.48	5.83	BDL	BDL
	29/11/2024	53.9	20.7	10.57	12.35	BDL	BDL	BDL	0.86	13.87	5.69	BDL	BDL
December	02/12/2024	45.8	18.2	8.81	9.89	BDL	BDL	BDL	0.63	11.47	6.31	BDL	BDL
	05/12/2024	48.3	19.9	9.05	10.01	BDL	BDL	BDL	0.66	12.55	6.09	BDL	BDL
	10/12/2024	42.7	15.1	8.42	9.57	BDL	BDL	BDL	0.58	12.83	6.83	BDL	BDL
	13/12/2024	49.5	16.9	9.19	10.17	BDL	BDL	BDL	0.64	13.18	6.2	BDL	BDL
	16/12/2024	51.1	20.0	9.57	11.03	BDL	BDL	BDL	0.72	13.72	5.85	BDL	BDL
	20/12/2024	43.7	15.5	8.68	9.80	BDL	BDL	BDL	0.59	11.89	5.74	BDL	BDL
	24/12/2024	46	18.6	8.9	9.67	BDL	BDL	BDL	0.67	11.52	6.61	BDL	BDL
	28/12/2024	48.2	19.7	9.26	10.29	BDL	BDL	BDL	0.81	12.49	6.4	BDL	BDL

Pettavaithalai													
MONTH	**DATE**	**PM10**	**PM2.5**	**SO_2**	**NO_2**	**Ni**	**Pb**	**As**	**CO**	**O3**	**NH3**	**C6H6**	**BaP**
October	01/10/2024	53.0	22.8	10.60	11.93	BDL	BDL	BDL	0.85	13.04	6.76	BDL	BDL
	04/10/2024	50.1	21.4	9.78	9.10	BDL	BDL	BDL	0.81	12.80	6.68	BDL	BDL
	07/10/2024	52.4	23.3	10.35	11.42	BDL	BDL	BDL	0.78	12.95	6.15	BDL	BDL
	10/10/2024	47.1	19.9	10.15	11.18	BDL	BDL	BDL	0.67	12.71	6.42	BDL	BDL
	16/10/2024	48.8	19.2	10.58	12.09	BDL	BDL	BDL	0.70	13.58	6.31	BDL	BDL
	19/10/2024	50.5	21.1	10.69	12.45	BDL	BDL	BDL	0.73	13.91	6.91	BDL	BDL
	22/10/2024	53.8	22.0	10.81	13.23	BDL	BDL	BDL	0.80	14.12	5.66	BDL	BDL
	25/10/2024	47.3	17.6	10.10	12.25	BDL	BDL	BDL	0.69	13.40	6.27	BDL	BDL
November	04/11/2024	48.9	18.1	9.58	10.40	BDL	BDL	BDL	0.65	12.15	6.57	BDL	BDL
	07/11/2024	53.3	20.9	10.20	11.10	BDL	BDL	BDL	0.83	12.86	6.05	BDL	BDL
	12/11/2024	47.5	17.0	9.51	10.46	BDL	BDL	BDL	0.64	12.40	6.68	BDL	BDL
	15/11/2024	49.6	19.4	9.79	10.97	BDL	BDL	BDL	0.76	12.95	6.41	BDL	BDL
	20/11/2024	52.7	22.5	10.14	11.19	BDL	BDL	BDL	0.68	13.15	5.79	BDL	BDL
	23/11/2024	50.0	19.3	9.70	10.40	BDL	BDL	BDL	0.71	12.11	6.32	BDL	BDL
	26/11/2024	54.1	24.2	10.44	11.79	BDL	BDL	BDL	0.85	13.27	5.70	BDL	BDL
	29/11/2024	55.0	25.1	10.80	11.36	BDL	BDL	BDL	0.90	13.52	5.54	BDL	BDL
December	02/12/2024	47.7	20.0	9.33	10.01	BDL	BDL	BDL	0.67	12.49	6.20	BDL	BDL
	05/12/2024	50.4	21.8	9.6	10.36	BDL	BDL	BDL	0.72	13.08	5.75	BDL	BDL
	10/12/2024	46.6	17.7	9.18	11.1	BDL	BDL	BDL	0.63	13.31	6.48	BDL	BDL
	13/12/2024	51.0	18.2	9.85	10.94	BDL	BDL	BDL	0.66	12.72	5.83	BDL	BDL
	16/12/2024	54.5	21.5	10.41	11.52	BDL	BDL	BDL	0.79	13.96	5.69	BDL	BDL
	20/12/2024	48.3	18.0	9.92	11.10	BDL	BDL	BDL	0.64	13.45	6.07	BDL	BDL
	24/12/2024	49.7	19.7	10.37	11.59	BDL	BDL	BDL	0.75	12.98	6.19	BDL	BDL
	28/12/2024	50.6	20.4	10.53	13.08	BDL	BDL	BDL	0.85	14.45	5.95	BDL	BDL

Korpatti													
MONTH	**DATE**	**PM10**	**PM2.5**	**SO_2**	**NO_2**	**Ni**	**Pb**	**As**	**CO**	**O3**	**NH3**	**C6H6**	**BaP**
October	01/01/2024	50.4	21.3	9.78	10.69	BDL	BDL	BDL	0.74	12.70	6.50	BDL	BDL
	04/10/2024	48.0	20.0	10.16	8.85	BDL	BDL	BDL	0.69	11.83	6.77	BDL	BDL
	07/10/2024	51.1	19.4	10.49	11.09	BDL	BDL	BDL	0.71	12.64	6.31	BDL	BDL
	10/10/2024	45.3	16.6	9.14	9.97	BDL	BDL	BDL	0.60	12.05	6.05	BDL	BDL
	16/10/2024	46.2	17.5	9.42	10.06	BDL	BDL	BDL	0.63	12.51	6.68	BDL	BDL
	19/10/2024	48.9	20.4	9.71	10.71	BDL	BDL	BDL	0.67	12.38	6.53	BDL	BDL
	22/10/2024	50.7	18.8	9.96	11.16	BDL	BDL	BDL	0.75	13.55	5.94	BDL	BDL
	25/10/2024	52.2	19.7	10.42	12.60	BDL	BDL	BDL	0.78	13.81	5.69	BDL	BDL
November	04/11/2024	50.7	19.2	9.63	10.54	BDL	BDL	BDL	0.68	12.97	6.15	BDL	BDL
	07/11/2024	55.1	18.2	10.48	12.19	BDL	BDL	BDL	0.90	13.42	5.97	BDL	BDL
	12/11/2024	49.0	15.3	10.03	11.83	BDL	BDL	BDL	0.73	13.08	6.42	BDL	BDL
	15/11/2024	52.9	17.0	10.23	12.40	BDL	BDL	BDL	0.85	13.61	5.83	BDL	BDL
	20/11/2024	53.3	17.8	10.51	12.86	BDL	BDL	BDL	0.74	13.38	5.55	BDL	BDL
	23/11/2024	51.6	16.4	9.91	10.39	BDL	BDL	BDL	0.69	12.97	6.13	BDL	BDL
	26/11/2024	56.4	21.0	10.27	11.27	BDL	BDL	BDL	0.76	13.61	5.44	BDL	BDL
	29/11/2024	57.5	22.4	10.57	11.80	BDL	BDL	BDL	0.81	13.98	5.32	BDL	BDL
December	02/12/2024	49.9	17.9	9.6	10.4	BDL	BDL	BDL	0.71	12.83	6.45	BDL	BDL
	05/12/2024	54	18.5	9.87	11.19	BDL	BDL	BDL	0.76	13.35	5.86	BDL	BDL
	10/12/2024	49.5	14.8	8.75	9.68	BDL	BDL	BDL	0.68	12.42	6.67	BDL	BDL
	13/12/2024	53.6	18.0	10.4	11.14	BDL	BDL	BDL	0.75	13.61	5.74	BDL	BDL
	16/12/2024	55	19.7	10.67	11.89	BDL	BDL	BDL	0.82	14.05	5.5	BDL	BDL
	20/12/2024	51.4	15.6	10.09	13.06	BDL	BDL	BDL	0.69	14.58	6.42	BDL	BDL
	24/12/2024	54.4	17.5	10.56	13.38	BDL	BDL	BDL	0.78	14.63	5.68	BDL	BDL
	28/12/2024	55.7	19	10.8	12.71	BDL	BDL	BDL	0.94	13.7	5.51	BDL	BDL

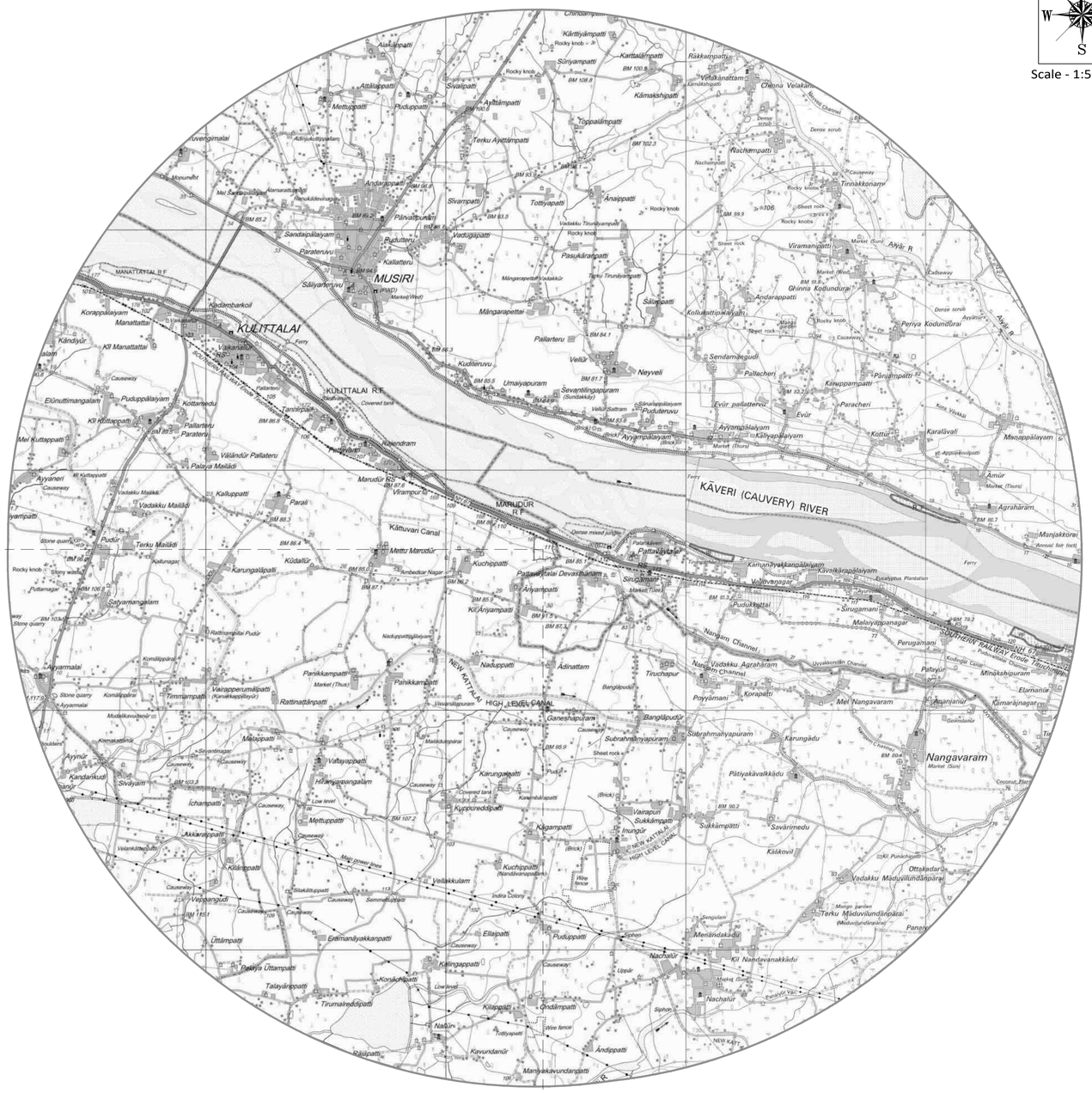
ANNEXURE-14

KEY CUM LOCATION PLAN

M/s. Greenergy Pure Ethanol Private Limited

Establishment of 6000 TCD Crushing Unit, 600 KLD Multi Feed (cane syrup, Molasses & grain based) Distillery Unit and 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

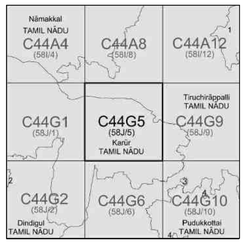
Part of Soi Toposheet No's : 58 J05 & 58 J09



GPS COORDINATES

Code	Latitude	Longitude
1	10° 54' 4.051" N	78° 28' 32.431" E
2	10° 54' 4.315" N	78° 28' 28.817" E
3	10° 54' 3.774" N	78° 28' 27.162" E
4	10° 54' 3.574" N	78° 28' 25.345" E
5	10° 54' 8.433" N	78° 28' 25.250" E
6	10° 54' 18.701" N	78° 28' 25.588" E
7	10° 54' 14.102" N	78° 28' 37.375" E
8	10° 54' 11.280" N	78° 28' 36.870" E
9	10° 54' 9.961" N	78° 28' 36.956" E
10	10° 54' 5.283" N	78° 28' 38.791" E
11	10° 54' 4.160" N	78° 28' 36.045" E
12	10° 54' 4.800" N	78° 28' 35.841" E
13	10° 54' 5.214" N	78° 28' 35.473" E
14	10° 54' 5.022" N	78° 28' 34.779" E
15	10° 54' 4.554" N	78° 28' 34.005" E

SOI TOPO SHEET INDEX



LEGEND

- PROJECT AREA
- 10 Kms RADIUS
- HABITATION
- STREAM
- TANK
- ROAD
- FOREST BOUNDARY
- HT POWER LINE
- TALUK BOUNDARY
- BUND

PROPONENT

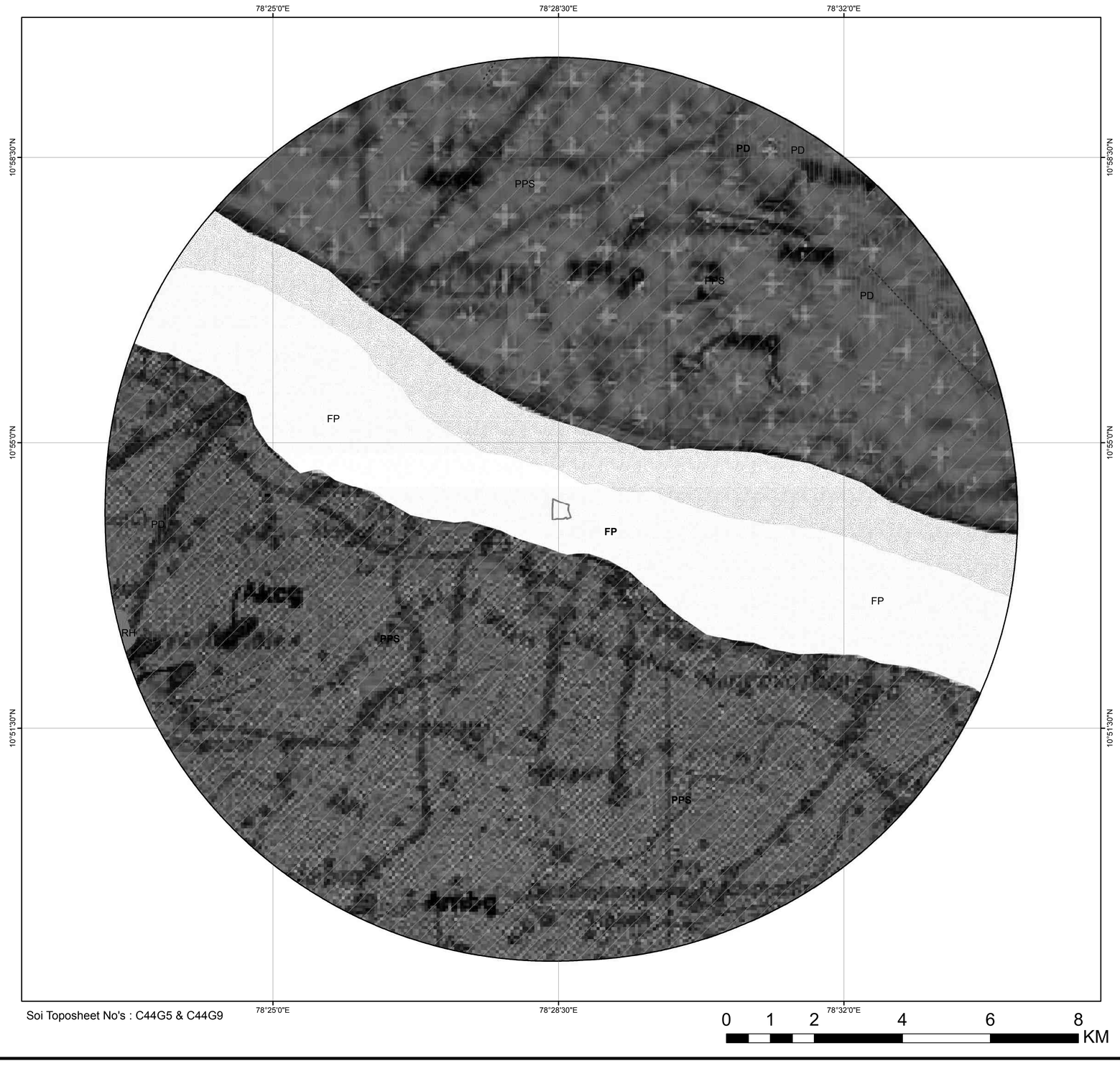
(E.V. NARESH KUMAR)
FAE - HG & Geo

M/s. Greenergy Pure Ethanol Private Limited

Kumaramangalam village, Kulithalai Taluk, Karur District. Tamil Nadu.

MAP PLATE 2

GEOLOGY & STRUCTURE, GEOMORPHOLOGY MAP



Soi Toposheet No's : C44G5 & C44G9

N

W E

S

1:50,000

Legend

- Project Area
- Buffer 10 KM
- RH Residual Hill
- PD Pediment
- FP Flood Plain
- PPS Pedeplain Shallow Weathered
- Lineament
- River

STRATIGRAPHY

Rock Type	Group	Period
Alluvium (Clay, Silt and sand)	-	Quaternary
Pegmatite; Quartz Vein	Acid Intrusive	Upper Proterozoic
Hornblende - Biotite Gneiss	Peninsular Gneissic Complex	Archaean
Granite Gneiss	Migmatite Complex	
Hornblende-Biotite Gneiss/Migmatite; Grey Granite, Garnet Granulite		
Amphibolite/Norite/Gabbro	Ultramafic and Mafic Complex	
Calc Gneiss/Calc Granulite/ Crystalline Limestone	Khondalite Group	
Quartzite		

Source: GSI Quadrangle map No. 58 J, 1995.



Proponent

E. V. Naresh Kumar

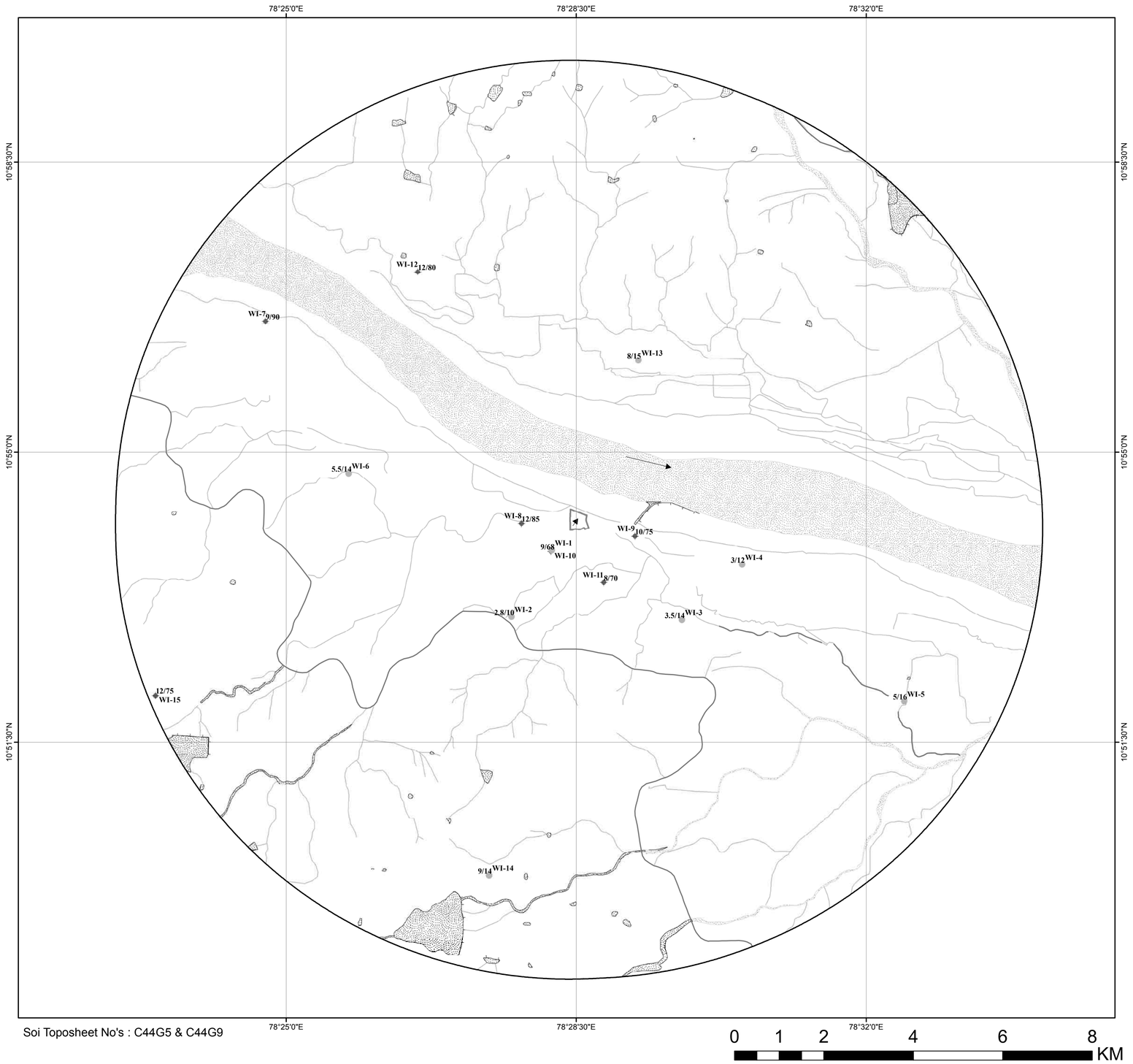
FAE-HG & Geo

M/s. Greenergy Pure Ethanol Private Limited

Kumaramangalam village, Kulithalai Taluk, Karur District. Tamil Nadu.

MAP PLATE 3

DRAINAGE/ HYDROGEOLOGY MAP



Soi Toposheet No's : C44G5 & C44G9

N

W E

S

1:50,000

Legend

- Project Area
- Buffer 10 KM
- Dry Tank
- Bund
- Canal
- River
- DW Dugwell
- BW Borewell
- Flow Direction
- Stream

Sr no.	Village Name	Latitude	Longitude
WI-1	Ariyampatti	10° 53' 48.85" N	78° 28' 12.16" E
WI-2	Nadupatti	10° 53' 00.65" N	78° 27' 42.91" E
WI-3	Tiaruchapur	10° 52' 58.51" N	78° 29' 46.34" E
WI-4	Padukkottai	10° 53' 38.51" N	78° 30' 29.85" E
WI-5	Nangavaram	10° 51' 59.52" N	78° 32' 27.25" E
WI-6	Parali	10° 54' 44.61" N	78° 25' 45.06" E
WI-7	Kulittalai	10° 56' 34.63" N	78° 24' 44.99" E
WI-8	Marudur (Near Subrahmanya Swamy Temple)	10° 54' 08.35" N	78° 27' 50.25" E
WI-9	Pettavaithalai	10° 53' 59.05" N	78° 29' 12.25" E
WI-10	Melariyampatti (shri Bhagavathi Amman Temple)	10° 53' 48.11" N	78° 28' 11.60" E
WI-11	Pettavaithalai (Govt. High School)	10° 53' 25.53" N	78° 28' 49.74" E
WI-12	Musiri	10° 57' 10.42" N	78° 26' 35.08" E
WI-13	Neyveli	10° 56' 06.35" N	78° 29' 14.75" E
WI-14	Kalingappati	10° 49' 53.41" N	78° 27' 26.76" E
WI-15	Ayynur	10° 52' 03.75" N	78° 23' 25.30" E

Proponent

E. V. Naresh Kumar
FAE-HG & Geo

ANNEXURE-15

ECOLOGY & BIODIVERSITY STUDIES

1. Flora of Project site.

Table 1: Checklist of Trees recorded at Project Site.

Sl. No	Scientific Name	Local name	Family	RET Status	Uses	Girth class Range (cm)	No. recorded
1	*Azadirachta indica* A.Juss.	Akaluti	Meliaceae	Common	Medicinal, edible and traditional	38-66	6
2	*Borasus flabellifer* L.	Panai	Arecaceae	Common	Edible and Medicinal	31-46	8
3	*Cocos nucifera* L.	Cekaracam	Arecaceae	Common	Edible and Medicinal	34-92	108
4	*Samanea saman* (Jacq.) Merr.	Thoongu moonji Maram	Fabaceae	Common	Edible and Medicinal	82-232	5
Total							**127**

Note:- Species recorded by EHSCPL Team

Table 2: Girth Class distribution of Trees at Project Site

Sl No.	Girth Class (Cm)	No. Observed	Percentage
1	0-30	0	0
2	31-60	65	51.181
3	61-90	57	44.882
4	91-120	3	2.362
5	121-150	0	0
6	Above 150	2	1.575
Total		**127**	**100**

Table 3: Basal area and Carbon sequestration potential of Tree Species at Project Site

Sl. No	Scientific Name	Basal area (m^2/Ha.)	CO_2
1	*Azadirachta indica* A.Juss.	0.008	0.693
2	*Borasus flabellifer* L.	0.008	0.617
3	*Cocos nucifera* L.	0.254	23.739
4	*Samanea saman* (Jacq.) Merr.	0.075	6.791
Total		**0.346**	**31.840**

Table 4: Checklist of Herbs and Shrubs recorded at Project Site.

Sl. No	Scientific Name	Local name	Family	RET Status	Uses
Herbs					
1	*Abutilon indicum* (L.) Sweet	Kakkati	Malvaceae	Common	Medicinal
2	*Chloris barbata* SW	Kavetu	Poaceae	Common	Medicinal
3	*Croton bonplandianum* Baill.	Attupuntu	Euphorbiaceae	Common	Medicinal
4	*Mimosa pudica* L.	Arcalakam	Fabaceae	Common	Medicinal & ornamental
5	*Sida acuta* Burm. fil.	Appatta	Malvaceae	Common	Medicinal
6	*Tridax procumbens* L.	Kenattuppuntu	Asteraceae	Common	Medicinal
Shrubs					
1	*Calotropis procera* R.BR.	Vellai erukku	Asclepiadaceae	Common	Medicinal
2	*Hibiscus vitifolius* L.	Centutti	Malvaceae	Common	Medicinal
3	*Parthenium hysterophorus* L.	Vishapoondu	Asteraceae	Common	Medicinal
4	*Prosopis juliflora* (SW.) DC.	Velikattan	Fabaceae	Common	Fuel wood
5	*Stachytarpheta indica* (L.)	Cimainayuruvi	Verbenaceae	Common	Edible and medicinal
Climbers					
1	*Ipomoea obscura* (L.) Ker Gawler	Chirudali	Convolvulaceae	Common	Edible & Medicinal

Note:- Species recorded by EHSCPL Team

Table 5: Family-wise Floristic Diversity at Project Site

Sl No.	Family	Trees	Herbs	Shrubs	Climber
1	Arecaceae	2	-	-	-
2	Asclepiadaceae	-	-	1	-
3	Asteraceae	-	1	1	-
4	Convolvulaceae	-	-	-	1
5	Euphorbiaceae	-	1	-	-
6	Fabaceae	1	1	1	-
7	Malvaceae	-	2	1	-
8	Meliaceae	1	-	-	-
9	Poaceae	-	1	-	-
10	Verbenaceae	-	-	1	-
Occurrence		**3**	**5**	**5**	**1**
Total		**4**	**6**	**5**	**1**

Project site Flora



Cocos nucifera
10°54'5.08"N 78°28'36.37"E



Mimosa pudica
10°54'6.84"N 78°28'37.36"E

	
Azadirachta indica 10°54'6.84"N 78°28'37.36"E	*Hibiscus vitifolius* 10°54'9.37"N 78°28'36.46"E

2. Fauna of the project site

Table 6: Checklist of Birds recorded at Project Site.

Sl. No.	Common Name	Scientific Name	Family	W(P)A, 1972 Schedule	Migratory Status	No. Observed
1	Ashy Prinia	*Prinia socialis* (Sykes, 1832)	Cisticolidae	Sch II (Sl No. 149)	R	3
2	Barn Swallow	*Hirundo rustica* (Linnaeus, 1758)	Hirundinidae	Sch II (Sl No.990)	R	4
3	Black Drongo	*Dicrurus macrocercus* (Vieillot, 1817)	Dicruridae	Sch II (Sl No. 223)	R	4
4	Common Myna	*Acridotheres tristis* (Linnaeus, 1766)	Sturnidae	Sch II (Sl No.955)	R	5
5	Greater coucal	*Centropus sinensis* (Stephens, 1815)	Cuculidae	Sch II (Sl No. 201)	R	2
6	House Crow	*Corvus splendens* (Vieillot, 1817)	Corvidae	-	R	1
7	House Swift	*Apus nipalensis* (Hodgson, 1836)	Apodidae	Sch II (Sl No. 1011)	RM	9
8	Indian grey hornbill	*Ocyceros birostris* (Scopoli, 1786)	Bucerotidae	Sch II (Sl No. 480)	R	1
9	Indian Pond heron	*Ardeola grayii* (Sykes, 1832)	Ardeidae	Sch II (Sl No.36)	R	4
10	Laughing Dove	*Spilopelia senegalensis* (Linnaeus, 1766)	Columbidae	Sch II (Sl No.742)	R	5
11	Median Egret	*Ardea intermedia (*Wagler, 1827)	Ardeidae	Sch II (Sl No. 37)	R	1
12	Paddyfield pipit	*Anthus rufulus* (Vieillot, 1818)	Motacillidae	Sch II (Sl No. 765)	R	7
13	Red Wattled Lapwing	*Vanellus indicus* (Boddaert, 1783)	Charadriidae	Sch II (Sl No. 795)	R	2
14	Red-naped ibis	*Pseudibis papillosa* (Temminck, 1824)	Threskiornithidae	Sch II (Sl No. 484)	R	4
15	Rose ringed parakeet	*Psittacula krameri* (Scopoli, 1769*)*	Psittacidae	Sch II (Sl No. 693)	R	15
16	Tawny Pipit	*Anthus campestris* (Linnaeus, 1758)	Motacillidae	Sch II (Sl No. 769)	-	6
Total						**73**

Note: Species recorded by EHSCPL team, W (P) A-Wildlife Protection Act, 1972 and R=resident. RM= resident to migrant

Project site Birds



Black Drongo
10°54'4.87"N 78°28'34.25"E



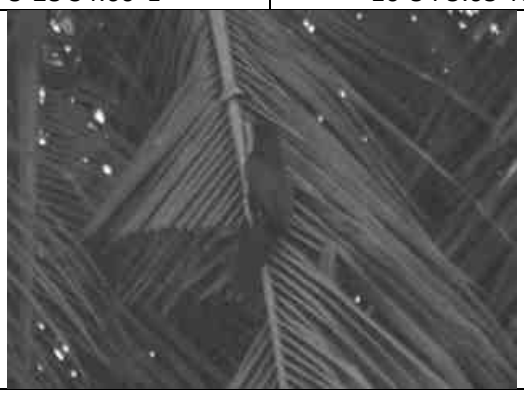
Tawny Pipet
10°54'6.45"N 78°28'33.59"E



Paddy Field Pipet
10°54'5.65"N 78°28'34.60"E



Red Wattled Lapwing
10°54'5.65"N 78°28'34.60"E



Greater coucal
10°54'5.08"N 78°28'36.37"E

Table 7: Checklist of Butterfly recorded at Project Site.

Sl. No.	Common Name	Scientific Name	Family	W(P)A, 1972 Schedule	No. Observed
1	Angled castor	*Ariadne ariadne* (Linnaeus, 1763)	Nymphalidae	-	4
2	Cabbage butterfly	*Pieris rapae (*Linnaeus, 1758)	Pieridae	-	4
3	Common castor	Ariadne merione (Cramer, 1779)	Nymphalidae	-	3
4	Common Grass Yellow	Eurema hecabe (Linnaeus, 1758)	Pieridae	-	10
5	Common gull	*Cepora nerissa* (Fabricius, 1775)	Pieridae	-	4
6	Common tiger	Danaus genutia (Cramer, 1779)	Nymphalidae	-	3
7	Crimson rose	Pachliopta hector (Linnaeus, 1758)	Papilionidae	Sch II	1

Sl. No.	Common Name	Scientific Name	Family	W(P)A, 1972 Schedule	No. Observed
				(Sl No. 259)	
8	Forget me not	*Catochrysops strabo* (Fabricius, 1793)	Lycaenidae	-	3
9	Grass jewel	*Chilades trochylus* (Freyer, 1845)	Lycaenidae	-	2
10	Lemon pansy	*Junonia lemonias* (Linnaeus, 1758)	Nymphalidae	-	8
11	Mottled Emigrant	*Catopsilia pyranthe* (Linnaeus, 1758)	Pieridae	-	14
12	Pale grass blue	*Pseudozizeeria maha* (Kollar, 1844)	Lycaenidae	-	3
13	Plain Tiger	Danaus chrysippus (Linnaeus, 1758)	Nymphalidae	-	9
14	Small salmon Arab	*Colotis amata* (Fabricius, 1775)	Pieridae	-	8
Total					**76**

Project site Butterflies



Lemon Pansy
10°54'12.26"N 78°28'36.23"E



Common Gull
10°54'9.37"N 78°28'36.46"E



Common Tiger
10°54'5.65"N 78°28'34.60"E



Mottled Emigrant
10°54'5.65"N 78°28'34.60"E

Table 8: Family wise Birds and Butterflies recorded at Project Site

Sl No.	Family	Birds	Butterflies
1	Apodidae	1	-
2	Ardeidae	2	-
3	Bucerotidae	1	-
4	Charadriidae	1	-
5	Cisticolidae	1	-

Sl No.	Family	Birds	Butterflies
6	Columbidae	1	-
7	Corvidae	1	-
8	Cuculidae	1	-
9	Dicruridae	1	-
10	Hirundinidae	1	-
11	Lycaenidae	-	3
12	Motacillidae	2	-
13	Nymphalidae	-	5
14	Papilionidae	-	1
15	Pieridae	-	5
16	Psittacidae	1	-
17	Sturnidae	1	-
18	Threskiornithidae	1	-
Occurrence		**14**	**4**
Total No.		**16**	**14**

3. Flora in Study Area.

Table 9: Checklist of Trees recorded at Study Area.

Sl. No	Scientific Name	Local name	Family	RET Status	Uses	Girth class Range (cm)	No. recorded
1	*Ailanthus excels* Roxb.	Perumaram	Simaroubaceae	Common	Medicinal	75	3
2	*Albizia lebbeck* (L.)Benth.	Vagai	Fabaceae	Common	Timber	75-400	3
3	*Azadirachta indica* A.Juss.	Vembu	Meliaceae	Common	Medicinal, edible & traditional	31-90	98
4	*Borasus flabellifer* L.	Panai	Arecaceae	Common	Edible & Medicinal	35-83	13
5	*Ceiba pentandra* (L.) Gaertn.	Ilavu	Malvaceae	Common	Timber & Medicinal	52	1
6	*Cocos nucifera* L.	Thennai	Arecaceae	Common	Edible & Medicinal	46-98	163
7	*Dalbergia sissoo* Roxb. ex DC.	Nukkam	Fabaceae	Common	Timber	52-56	3
8	*Ficus bengalensis* L.	Peraal	Moraceae	Common	Edible & Medicinal	83	1
9	*Ficus racemosa* L.	Athi Maram	Moraceae	Common	Medicinal	68-78	3
10	*Ficus religiosa* L.	Arasu	Moraceae	Common	Medicinal &Traditional	105-140	2
11	*Melia azedarach* L.	Malaivembu	Meliaceae	Common	Medicinal, Pulp wood & plywood	137	1
12	*Pongamia pinnata* (L.)Pierre	Pungai	Fabaceae	Common	Medicinal	54-66	6
13	*Samanea saman* (Jacq.) Merr.	Amaivagai	Fabaceae	Common	Edible and Medicinal	40	1
14	*Senna siamea* (Lam.) H.S.Irwin & Barneby	Manjal Konrai	Fabaceae	Common	Ornamental and Fuel wood	39-66	8
15	*Tamarindus indica* L.	Puli	Fabaceae	Common	Edible & medicinal	92	1
16	*Tectona grandis* L.F.	Thekku	Verbenaceae	Common	Timber	35-42	2
17	*Thespesia populnea* (L.) Sol. ex Corrêa	Poovarasu	Malvaceae	Common	Ornamental & medicinal	61-70	15
18	*Vachellia leucophloea* (Roxb.) Maslin, Seigler & Ebinger	Velvaelam	Fabaceae	Common	Medicinal & Timber	54-56	3
Total							**327**

Note:- Species recorded by EHSCPL Team

Table 10: Girth Class distribution of trees at Study Area.

Sl No.	Girth Class (cm)	No. recorded	Percentage
1	31-60	120	36.697
2	61-90	183	55.963
3	91-120	21	6.422
4	121-150	2	0.612
5	above 150	1	0.306
Total		**327**	**100**

Table 11: Basal area and Carbon sequestration potential of Tree Species in Study Area.

Sl. No	Scientific Name	Basal area (m^2/Ha.)	CO_2
1	*Ailanthus excels* Roxb.	0.022	0.888
2	*Albizia lebbeck* (L.)Benth.	0.239	12.877
3	*Azadirachta indica* A.Juss.	0.350	13.292
4	*Borasus flabellifer* L.	0.056	2.649
5	*Ceiba pentandra* (L.) Gaertn.	0.004	0.102
6	*Cocos nucifera* L.	1.299	63.678
7	*Dalbergia sissoo* Roxb. ex DC.	0.012	0.329
8	*Ficus bengalensis* L.	0.009	0.349
9	*Ficus racemosa* L.	0.021	0.616
10	*Ficus religiosa* L.	0.041	1.553
11	*Melia azedarach* L.	0.025	0.868
12	*Pongamia pinnata* (L.)Pierre	0.027	0.509
13	*Samanea saman* (Jacq.) Merr.	0.002	0.771
14	*Senna siamea* (Lam.) H.S.Irwin & Barneby	0.032	0.083
15	*Tamarindus indica* L.	0.011	0.917
16	*Tectona grandis* L.F.	0.004	0.190
17	*Thespesia populnea* (L.) Sol. ex Corrêa	0.086	3.918
18	*Vachellia leucophloea* (Roxb.) Maslin, Seigler & Ebinger	0.012	0.598
Total		**2.252**	**104.187**

Table 12: Phyto-Sociological Parameters of Trees in Study Area.

Sl. No	Scientific Name	Phyto-sociological parameters									
		N	O	D	F	BA(m^2)	Do	RD	Rdo	RF	IVI
1	*Ailanthus excels* Roxb.	3	2	0.50	33.333	0.134	0.010	0.917	0.994	6.452	8.363
2	*Albizia lebbeck* (L.)Benth.	3	2	0.50	33.333	1.432	0.106	0.917	10.603	6.452	17.972
3	*Azadirachta indica* A.Juss.	98	5	16.33	83.333	2.102	0.156	29.969	15.561	16.129	61.659
4	*Borasus flabellifer* L.	13	3	2.17	50.000	0.337	0.025	3.976	2.497	9.677	16.150
5	*ceiba pentandra* (L.) Gaertn.	1	1	0.17	16.667	0.022	0.002	0.306	0.159	3.226	3.691
6	*Cocos nucifera* L.	163	5	27.17	83.333	7.792	0.577	49.847	57.676	16.129	123.652
7	*Dalbergia sissoo* Roxb. ex DC.	3	1	0.50	16.667	0.070	0.005	0.917	0.516	3.226	4.659
8	*Ficus bengalensis* L.	1	1	0.17	16.667	0.055	0.004	0.306	0.406	3.226	3.937
9	*Ficus racemosa* L.	3	1	0.50	16.667	0.124	0.009	0.917	0.919	3.226	5.063
10	*Ficus religiosa* L.	2	2	0.33	33.333	0.244	0.018	0.612	1.804	6.452	8.867
11	*Melia azedarach* L.	1	1	0.17	16.667	0.149	0.011	0.306	1.105	3.226	4.637
12	*Pithecellobium dulce* (Roxb.)Benth.	1	1	0.17	16.667	0.163	0.012	0.306	1.209	3.226	4.741
13	*Pongamia pinnata* (L.)Pierre	6	1	1.00	16.667	0.013	0.001	1.835	0.094	3.226	5.155
14	*Samanea saman* (Jacq.) Merr.	1	1	0.17	16.667	0.194	0.014	0.306	1.437	3.226	4.969
15	*Senna siamea* (Lam.) H.S.Irwin & Barneby	8	1	1.33	16.667	0.067	0.005	2.446	0.499	3.226	6.171
16	*Tectona grandis* L.F.	2	1	0.33	16.667	0.024	0.002	0.612	0.176	3.226	4.013
17	*Thespesia populnea* (L.) Sol. ex Corrêa	15	1	2.50	16.667	0.515	0.038	4.587	3.811	3.226	11.624
18	*Vachellia leucophloea* (Roxb.) Maslin, Seigler & Ebinger	3	1	0.50	16.667	0.072	0.005	0.917	0.535	3.226	4.678
Total		**327**	**31**	**54.5**	**516.667**	**13.509**	**1**	**100**	**100**	**100**	**300**

Note: - N=Number, O=Occurrence, D=Density, F=Frequency, BA= Basal area, Do= Dominance, RD=Relative Density, Rdo= Relative Dominance, RF= Relative Frequency, IVI=Important Value Index.

Table 13: Checklist of Herbs, Shrubs and Climbers recorded at Study Area.

Sl. No	Scientific Name	Local name	Family	RET Status	Uses
Herbs					
1	*Abutilon indicum* (L.) Sweet	Kakkati	Malvaceae	Common	Medicinal
2	*Achyranthes aspera* L.	Akatam	Amaranthacea	Common	Medicinal
3	*Argemone mexicana* L.	Avaramuki	Papaveraceae	Common	Edible and medicinal
4	*Chloris barbata* SW	Kavetu	Poaceae	Common	Medicinal
5	*Croton bonplandianum* Baill.	Attupuntu	Euphorbiaceae	Common	Medicinal
6	*Hyptis suaveolens* (L.) Poit.	Vilatti thulasi	Lamiaceae	Common	Medicinal
7	*Mimosa pudica* L.	Arcalakam	Fabaceae	Common	Medicinal & ornamental
8	*Ocimum sanctum* L.	Alankai	Lamiaceae	Common	Edible and medicinal
9	*Sida acuta* Burm. fil.	Appatta	Malvaceae	Common	Medicinal
10	*Tribulus terrestris* L.	Acacaram	Zygophyllaceae	Common	Medicinal
11	*Tridax procumbens* L.	Kenattuppuntu	Asteraceae	Common	Medicinal
Shrubs					
1	*Calotropis procera* R.BR.	Vellai erukku	Asclepiadaceae	Common	Medicinal
2	*Hibiscus vitifolius*	Centutti	Malvaceae	Common	Medicinal
3	*Lantana camara* L.	Arippu	Verbenaceae	Common	Medicinal & ornamental
4	*Ocimum tenuiflorum* L.	Alankai	Lamiaceae	Common	Medicinal
5	*Parthenium hysterophorus* L.	Vishapoondu	Asteraceae	Common	Medicinal
6	*Prosopis juliflora* (SW.) DC.	Velikattan	Fabaceae	Common	Fuel wood
7	*Senna occidentalis* (L.) Link,	Ponnavarai	Fabaceae	Common	Medicinal
8	*Senna tora* (L.) Roxb.	Thagarai	Fabaceae	Common	Edible and medicinal
9	*Stachytarpheta indica* (L.)	Cimainayuruvi	Verbenaceae	Common	Edible and medicinal
10	*Xanthium strumarium* (Moretti) D. Love	Marul-umattai	Asteraceae	Common	Medicinal
Climbers					
1	*Ipomoea obscura* (L.) Ker Gawler	Chirudali	Convolvulaceae	Common	Edible & Medicinal

Note:- Species recorded by EHSCPL Team

Table 14: Family-wise Floristic Diversity at Study Area.

Sl No.	Family	Trees	Herbs	Shrubs	Climbers
1	Amaranthaceae	-	1	-	-
2	Arecaceae	2	-	-	-
3	Asclepiadaceae	-	-	1	-
4	Asteraceae	-	1	2	-
5	Convolvulaceae	-	-	-	1
6	Euphorbiaceae	-	1	-	-
7	Fabaceae	7	1	3	-
8	Lamiaceae	-	2	1	-
9	Malvaceae	2	2	1	-
10	Meliaceae	2	-	-	-
11	Moraceae	3	-	-	-
12	Papaveraceae	-	1	-	-
13	Poaceae	-	1	-	-
14	Simaroubaceae	1	-	-	-
15	Verbenaceae	1	-	2	-
16	Zygophyllaceae	-	1	-	-
Occurrence		**7**	**9**	**6**	**1**
Total No.		**18**	**11**	**10**	**1**

Study area Flora



Abutilon indicum
Mayanur Barrage Right Canal/ Agricultural land
10°52'52.86"N 78°26'48.27"E



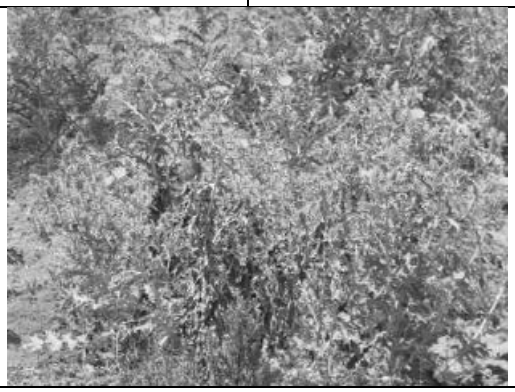
Calotropis procera
Mayanur Barrage Right Canal/ Agricultural land
10°52'52.21"N 78°26'49.66"E



Stachytarpheta jamaicensis
Mayanur Barrage Right Canal/ Agricultural land
10°52'52.74"N 78°26'50.10"E



Xanthium strumarium
Agricultural land near Pettavaithalai
10°53'57.73"N 78°28'44.70"E



Argemone mexicana
Agricultural land near Pettavaithalai
10°54'24.39"N 78°28'30.79"E

4. Fauna of the Study area

Table 15: Checklist of Birds recorded at Study Area

Sl. No.	Common Name	Scientific Name	Family	W(P)A, 1972 Schedule	Migratory Status	No. Observed
1	Ashy Prinia	*Prinia socialis* (Sykes, 1832)	Cisticolidae	Sch II (Sl No. 149)	R	6
2	Asian open bill	*Anastomus oscitans* (Boddaert, 1783)	Ciconiidae	Sch II(Sl No. 969)	R	2
3	Black Drongo	*Dicrurus macrocercus* (Vieillot, 1817)	Dicruridae	Sch II (Sl No. 223)	R	7
4	Cattle Egret	*Bubulcus ibis* (Linnaeus, 1758)	Ardeidae	Sch II(Sl No.29)	RM	3
5	Common Myna	*Acridotheres tristis* (Linnaeus, 1766)	Sturnidae	Sch II (Sl No.955)	R	4
6	Common sandpiper	*Actitis hypoleucos* Linnaeus, 1758	Scolopacidae	Sch II(Sl No.844)	RM	6
7	Greater coucal	*Centropus sinensis* (Stephens, 1815)	Cuculidae	Sch II (Sl No. 201)	R	2
8	Grey heron	*Ardea cinerea* (Linnaeus, 1758)	Ardeidae	Sch II(Sl No.35)	RM	2
9	House Crow	*Corvus splendens* (Vieillot, 1817)	Corvidae	-	R	6
10	House Swallow	*Hirundo javanica* (Sparrman, 1789)	Hirundinidae	-	R	8
11	House Swift	*Apus nipalensis* (Hodgson, 1836)	Apodidae	Sch II (Sl No. 1011)	RM	2
12	Indian Pond heron	*Ardeola grayii* Sykes, 1832	Ardeidae	Sch II (Sl No.36)	R	12
13	Laughing Dove	*Spilopelia senegalensis* (Linnaeus, 1766)	Columbidae	Sch II (Sl No.742)	R	3
14	Little cormorant	*Microcarbo niger* (Vieillot, 1817)	Phalacrocoracidae	Sch II(Sl No.165)	RM	98
15	Little egret	*Egretta garzetta* Linnaeus, 1766	Ardeidae	Sch II(Sl No.40)	R	2
16	Little ringed plover	*Charadrius dubius Scopoli, 1786*	Charadriidae	Sch II(Sl No.791)	RM	8
17	Median egret	*Ardea intermedia* Wagler, 1827	Ardeidae	Sch II (Sl No. 37)	RM	2
18	Paddyfield pipit	*Anthus rufulus* Vieillot, 1818	Motacillidae	Sch II (Sl No. 765)	R	14
19	Pied Bushchat	*Saxicola caprata* (Linnaeus, 1766)	Muscicapidae	Sch II(Sl No.387)	R	1
20	Red Wattled Lapwing	*Vanellus indicus* Boddaert, 1783	Charadriidae	Sch II (Sl No. 795)	R	7
21	Rose ringed parakeet	*Psittacula krameri* (Scopoli, 1769)	Psittacidae	Sch II (Sl No. 693)	R	15
22	Western Koel	*Eudynamys scolopaceus* (Linnaeus, 1758)	Cuculidae	Sch II(Sl No.194)	R	1
23	White-breasted Kingfisher	*Halcyon smyrnensis* (Linnaeus, 1758)	Alcedinidae	Sch II(Sl No.499)	R	7
24	Wood sandpiper	*Tringa glareola* (Linnaeus, 1758)	Scolopacidae	Sch II(Sl No.874)	M	2
25	Yellow wagtail	*Motacilla flava* (Linnaeus, 1758)	Motacillidae	Sch II(Sl No.773)	RM	6
Total						**226**

Note: - Species recorded by EHSCPL Team, W (P) A= Wildlife Protection Act 1972, R= Resident, RM= Resident Migratory and M=Migratory.

Study area Birds	
	
Little Egret 10°54'26.67"N 78°26'49.05"E Agricultural Land/ Nala near Mettumarathur	Asian Open bill 10°54'27.03"N 78°26'50.60"E Agricultural Land/ Nala near Mettumarathur
	
Little cormorant 10°54'27.03"N 78°26'50.60"E Agricultural Land/ Nala near Mettumarathur	Indian Pond Heron 10°54'26.67"N 78°26'49.05"E Agricultural Land/ Nala near Mettumarathur
	
Median Egret 10°54'23.14"N 78°26'47.25"E Agricultural Land/ Nala near Mettumarathur	Common Myna 10°54'23.14"N 78°26'47.25"E Agricultural Land/ Nala near Mettumarathur

	
House Crow Mayanur Barrage Right Canal/ Agricultural land 10°52'52.21"N 78°26'49.66"E	Indian Pond Heron Cauvery River 10°54'25.42"N 78°29'21.15"E
	
Little Cormorant Cauvery River 10°54'26.99"N 78°29'17.61"E	Western Yellow Wagtail Cauvery River 10°54'26.18"N 78°29'18.13"E
	
Little Ringed Plover Cauvery River 10°54'26.23"N 78°29'18.74"E	Indian Pond Heron Cauvery River 10°54'25.57"N 78°29'20.62"E
	

Common Sandpiper Cauvery River 10°54'25.57"N 78°29'20.62"E	Wood Sandpiper Cauvery River 10°54'25.57"N 78°29'20.62"E
	
Paddy field pipit Cauvery River 10°54'25.57"N 78°29'20.62"E	Little Cormorant Cauvery River 10°54'25.92"N 78°29'21.01"E
	
Cattle Egret Cauvery River 10°54'25.24"N 78°29'20.39"E	Black Drongo Agricultural land near Pettavaithalai 10°53'57.73"N 78°28'44.70"E

Table 16: Checklist of Butterflies recorded at Study Area.

Sl. No.	Common Name	Scientific Name	Family	W(P)A, 1972 Schedule	No. Observed
1	Cabbage butterfly	*Pieris rapae (*Linnaeus, 1758)	Pieridae	-	8
2	Common castor	*Ariadne merione* (Cramer, 1779)	Nymphalidae	-	6
3	Common Crow	*Euploea core* (Cramer, 1780)	Nymphalidae	-	3
4	Common Grass Yellow	*Eurema hecabe* (Linnaeus, 1758)	Pieridae	-	16
5	Common gull	*Cepora nerissa* (Fabricius, 1775)	Pieridae	-	4
6	Common tiger	*Danaus genutia* (Cramer, 1779)	Nymphalidae	-	6
7	Crimson rose	*Pachliopta hector (*Linnaeus, 1758)	Papilionidae	Sch II(Sl No. 259)	2
8	Forget me not	*Catochrysops strabo* (Fabricius, 1793)	Lycaenidae	-	6
9	Grass jewel	*Chilades trochylus* (Freyer, 1845)	Lycaenidae	-	4
10	Lemon pansy	*Junonia lemonias* (Linnaeus, 1758)	Nymphalidae	-	17
11	Lesser grass blue	*Zizina otis* (Fabricius, 1787)	Lycaenidae	-	1
12	Mottled Emigrant	*Catopsilia pyranthe* (Linnaeus, 1758)	Pieridae	-	8
13	Pioneer White	*Belenois aurota* (Fabricius, 1793)	Pieridae	-	3
14	Plain Tiger	*Danaus chrysippus* (Linnaeus, 1758)	Nymphalidae	-	18
15	Scarlet Tip	*Colotis annae* (Wallengren, 1857)	Pieridae	-	5
16	Tawny coster	*Acraea terpsicore* (Linnaeus, 1758)	Nymphalidae	-	6
17	White orange tip	*Ixias marianne* (Cramer, [1779])	Pieridae	-	9
Total					**122**

Note: - Species recorded by EHSCPL Team, W (P) A= Wildlife Protection Act 1972

Table 17: Family wise Bird and Butterflies recorded at Study Area.

Sl No.	Family	Birds	Butterflies
1	Alcedinidae	1	-
2	Apodidae	1	-
3	Ardeidae	5	-
4	Charadriidae	2	-
5	Ciconiidae	1	-
6	Cisticolidae	1	-
7	Columbidae	1	-
8	Corvidae	1	-
9	Cuculidae	2	-
10	Dicruridae	1	-
11	Hirundinidae	1	-
12	Lycaenidae	-	3
13	Motacillidae	2	-
14	Muscicapidae	1	-
15	Nymphalidae	-	6
16	Papilionidae	-	1
17	Phalacrocoracidae	1	-
18	Pieridae	-	7
19	Psittacidae	1	-
20	Scolopacidae	2	-
21	Sturnidae	1	-
Occurrence		**18**	**4**
Total No.		**25**	**17**

Study Photographs



Girth measurement
Project site



Girth measurement
Project site





Bird Watching Near Mettumarathur Village	Recording of GPS Near Mettumarathur Village
	
Girth measurement Near Mettumarathur Village	Bird Watching Near Kaveri River
	
Discussion with Local fisherman Near Masuri Village	Recording of GPS Near Pettavaithalai

ANNEXURE-16



INDEX

Project Boundary	
Road	
11KV Electric Pole	∅EP
Bridge	
Green belt	
Green Belt Tier–1 Plantation	
Green Belt Tier–2 Plantation	
Green Belt Tier–3 Plantation	
Green Cover	
Green Cover Plantation	
Truck parking	
Car parking	
Nala	
Rain Water Storage Pond	

NOTES–

1) ALL DIMENSIONS ARE IN MM.
2) THIS DRAWING IS PRELIMINARY AND MAY CHANGE DURING DETAILED ENGINEERING.

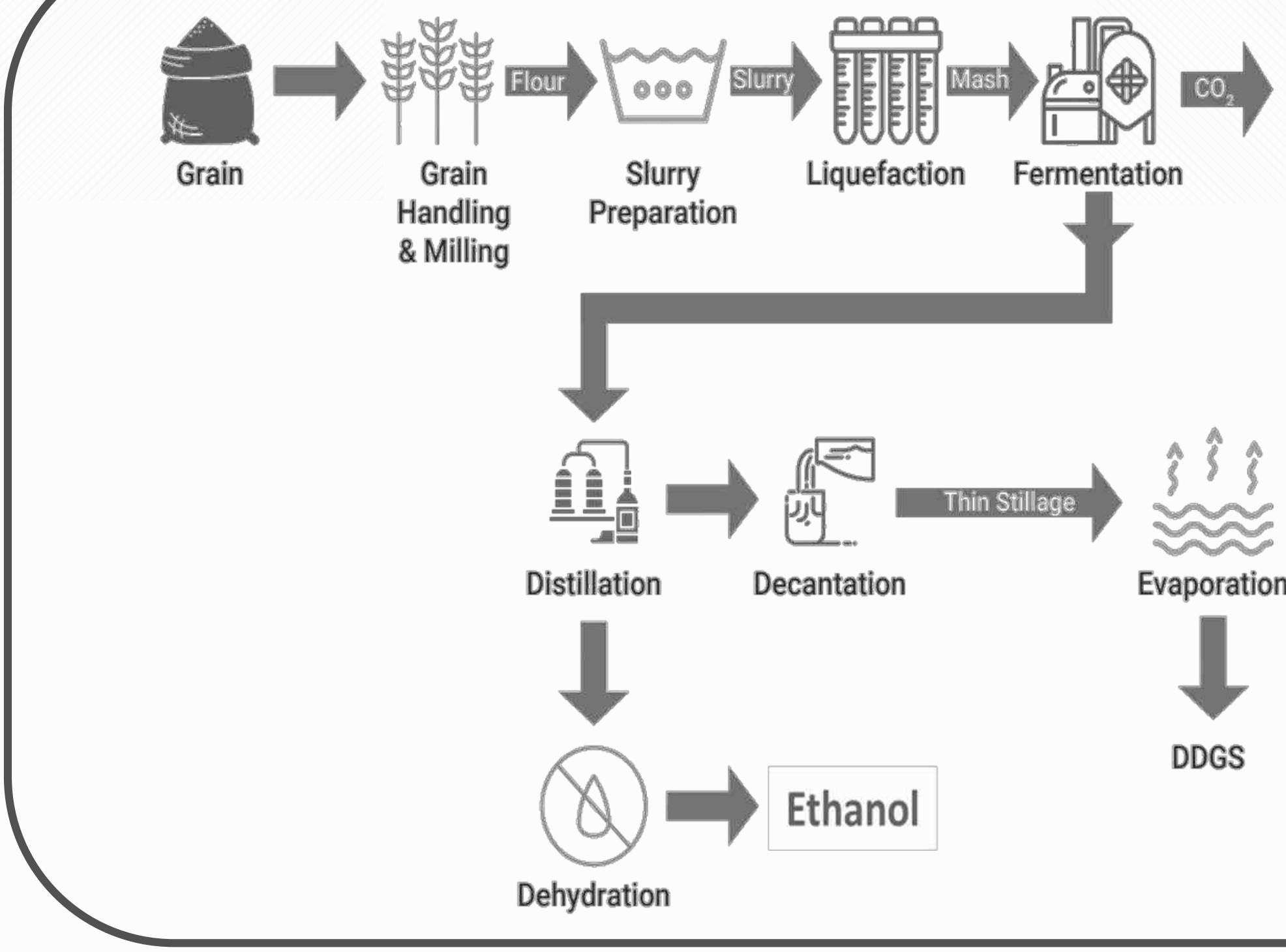
REV. NO.	DESCRIPTION	DRAWN	CHKD.	APPD.	DATE

REGREEN-EXCEL EPC INDIA LIMITED
OFFICE NO 507 & 508 S.NO. 23 P.NANDAN PROBIZ, PUNE CITY, BANER GAON, PUNE,HAVELI, MAHARASHTRA, INDIA, 411045

CLIENT :
PLANT :
LOCATION :

TITLE :Establishment of 600 KLD Grain based Distillery & 13 MW Co-Generation Unit at Kumaramangalam Village, Kulithalai Taluk, Karur District, Tamil Nadu State by M/s. Greenergy Pure Ethanol Private Limited

A0 | DWG. NO. 4



Prepared by

Environmental Health & Safety Consultants Pvt. Ltd.,

[QCI-NABET ACCREDITED & ISO 9001:2015 Certified Organization]

No. 174, New No. 13/2, 14th 'E' Cross

Agrahara Dasarahalli, Bengaluru - 560 010. Karnataka

e-mail: ehscblr1974@gmail.com