

EXECUTIVE SUMMARY

DRAFT ENVIRONMENT IMPACT ASSESSMENT REPORT

EXPANSION OF GRAIN BASED DISTILLERY PLANT FROM
60 KLPD TO 90 KLPD AT GAT NO. 1190, KHADKI, TAL –
DAUND, DIST. – PUNE

BY

M/S. VASUNDHARA GREEN BIO-ENERGY PRIVATE
LIMITED.

PROJECT PROPONENT

M/S VASUNDHARA GREEN BIO-ENERGY PRIVATE
LIMITED

EXECUTIVE SUMMARY

1.1 Introductions

M/s Vasundhara Green Bio Energy Private Limited. (VGBPL.) is company incorporated with an objective to manufacture and sale of RS, ENA and Ethanol. VGBPL is registered as private limited company registration no. U11100PN2022PTC208550 on 12th February 2022, under Companies Act, 2013 (18 of 2013) at 1st floor, Meghdoot Building, S.No.13/4A, Opp. Akashwani Kendra, Hadapsar, Pune - 411028, Maharashtra. Since beginning, VGBPL has made good progress by ensuring higher productivity and energy saving by adopting cost effective modern technology and methodologies. The project is located in Gat No. 1190, Khadki, Tal –Daund, Dist. – Pune.

M/s Vasundhara Green Bio Energy Private Limited is obtained environment clearance for 60 KLPD ethanol grain-based plant from EAC, MOEF & CC on 31/08/2022 (EC identification number EC22A060MH121927 dated 31/08/2022 (Proposal number IA/MH/IND2/281236/2022).

Construction work of 60 KLPD project is in progress. Consent to Establish is obtained from Maharashtra Pollution Control Board.

VGBPL has now proposing expansion of distillery from 60KLPD to 90 KLPD with MEE, Dryer and CPU to achieve zero liquid discharge.

1.2 Project location

The project is located in Gat No. 1190, Khadki, Tal –Daund, Dist. – Pune. Latitude 18°21'20.05"N Longitude: 74°41'6.08"E

1.3 Project Description

Sr no	Particulars	Details
1	Name of the Company	M/s Vasundhara Green Bio Energy Private Limited
2	Address for Correspondence	1st floor, Meghdoot Building, S.No.13/4A, Opp. Akashwani Kendra, Hadapsar, Pune - 411028, Maharashtra
3	Location	Gat No. 1190, Khadki, Tal –Daund, Dist. – Pune . Latitude 18°10'54.03"N Longitude: 74°54'20.15"E
4	Constitution of the Organization	Private Limited

5	Capacity of the Project	Existing: <ul style="list-style-type: none"> Ethanol: 60KLPD Co-Generation Power Plant: 2.5 MW Expansion: <ul style="list-style-type: none"> Ethanol: 30 KLPD or Rectified spirit :90 KLPD or ENA: 90 KLPD After expansion: <ul style="list-style-type: none"> Ethanol: 90KLPD Rectified spirit :90 KLPD or ENA: 90 KLPD Co-Generation Power Plant: 2.5 MW
6	No. of Working Days	330 days
7	Total land	Total land: 8 ha & Green Belt 2.70 ha
8	Products	Existing: <ul style="list-style-type: none"> Ethanol: 60KLPD Power: 2.5 MW Expansion: <ul style="list-style-type: none"> Ethanol: 30 KLPD or Rectified spirit :90 KLPD or ENA: 90 KLPD After expansion: <ul style="list-style-type: none"> Ethanol: 90KLPD Rectified spirit :90 KLPD or ENA: 90 KLPD Power: 2.5 MW
9	Raw material requirement	Grain (primarily maize and broken rice)
10	Fresh water Source	Surface water. Bhima River water
11	Fresh Water requirement	Ethanol: 317 KLD Domestic: 15 KLD ENA: 400 KLD
12	Boilers	22 TPH
13	Power	2.0 MW
14	Steam	Ethanol: 11.37 TPH & ENA: 17.7 TPH
15	Fuel	Bagasse or Biomass :200 TPD
16	Effluent Generation	60 KLPD; Spent wash:401 M3/day and Other Effluent 95M3/Day 90 KLPD : Spent wash:401 M3/day and Other Effluent 174 M3/Day.
17	Effluent Treatment	Decantation Followed by MEE, DDWGS and CPU. Sewage will be treated in STP
18	APC system	60 m stack height & ESP
19	Manpower	Construction: 100 Persons and Operation Phase 70 Persons
20	Project cost	Existing Rs. 75 Cr & Expansion: 10 Cr

1.4 Basic Raw Material

Land requirement

Total Plot area is 8 ha. No additional land will be required for expansion. The existing distillery unit ethanol is located in Gat No. 1190, Khadki, Tal –Daund, Dist. – Pune. The proposed expansion will be within the existing plant.

Raw material:

Raw material: Grain (primarily maize and broken rice)

Sr. No	Raw Materials	For 60 KLPD MT/day	For 90 KLPD MT/day	Storage	Source	Transportation
1	Grain	150	225	Silo & Godown	Local market	By road
2	Bagasse	203	203	Covered Shed	From Nearby sugar factory	By road
3	Chemicals					
	Nutrient	0.1	0.15	Liquid from packed in cans and stored in godown	Local market	By road
	Sodium Hydroxide	0.5	0.55	Solid form packed in 30 kg bags & stored in godown	Local market	By road
	Amyloglucozydase Enzyme	0.1	0.15	Solid form packed in 25 kg bags & stored in godown	Local market	By road
	Saccharifying Enzyme (Alfa Amylase)	0.1	0.15	Liquid from packed in cans and stored in godown	Local market	By road
	Antifoam Agent	0.106	0.150	liquid from packed in drum and stored in godown	Local market	By road
	Yeast	0.106	0.150	Solid form & packed in Bags	Local market	By road

Grain Availability & Storage: For the proposed grain-based distillery, it will be necessary to have scientifically designed storage facility. During the period when grain prices are running low, it is advisable to purchase sufficient quantity of grains and store it for use in other seasons. Usually, 5.0 to 10.0 % losses take place during storage of grains and therefore, necessary care should be taken to prevent losses during storage. Grain requirement for 90 KLPD new distillery plant will be about 74250 MT/annum during off season for 330 working days. PP has proposed to install four grain silos of 10000 MT capacities each in the distillery premises to store the clean grain. Pre-cleaning system should be installed for cleaning of unloaded grain and after

cleaning it is to be stored in grain silos. Grain will be available from nearby market in Maharashtra and FCI will be provide grain for the distillery units.

Water Requirement: Total water requirement for the project will be 1109 KLD which will be further reduced through recycling & reuse of 793 KLD. Total fresh water demand for distillery operation is 317 KLD @5.1 KL of water/KL of Ethanol which will be sourced from Bhima River.

Power requirement: The steam and power generation from Boiler & TG set are 22TPH and 2.5 Mw respectively. The steam requirement for the proposed distillery process is 11.375 TPH, 17.7TPH steam either condensed in dump condenser or used in existing distillery. The steam requirement for ENA Mode will be 17.7 MT/hr. Required quantity of steam and power during season and off season will be available from proposed 22 TPH Boiler with 2.5 MW TG. For emergency, 1 DG set of 1000 KVA will be installed within the plant area.

Manpower requirement:

- **Construction Phase:** 100 people will be required for the construction phase
- **Operation Phase:** 70 Persons, Manpower will be hired from local.

Cost and implementation schedule:

The Capital cost of the proposed expansion of distillery project is estimated as Rs. 10 Cr. Project will be implemented within 7 months from the date of issue of EC and consent to establish by MPCB.

1.5 Benefits of the Project

The project is going to have positive impact on consumption behavior by way of raising average consumption and income through multiplier effect. The following changes in socio-economic status are expected to take place with this project. People perceive that the project will help in the development of social infrastructures/such as.

- ❖ Education facilities
- ❖ Banking facilities
- ❖ Post offices and Communication facilities
- ❖ Medical facilities

- ❖ Recreation facilities
- ❖ Road Transport facilities
- ❖ Educational facilities
- ❖ Water supply and sanitation

1.6 Baseline Environment

The project is located in Gat No. 1190, Khadki, Tal –Daund, Dist. – Pune. Latitude 18°21'20.05"N Longitude: 74°41'6.08"E. The study area is considered to be within 10 km radius of the project site for baseline environment monitoring. The studies were conducted for the period of March to May 2022.

Ambient Air Quality Status:

Particulate Matter (PM₁₀) : The maximum 66.9 $\mu\text{g}/\text{m}^3$ concentration of PM₁₀ was observed at Lonarwadi and minimum 51.4 $\mu\text{g}/\text{m}^3$ concentration was observed at Chincholi Village.

Particulate Matter (PM_{2.5}): The maximum 29.9 $\mu\text{g}/\text{m}^3$ concentration of PM_{2.5} was observed at Lonarwadi while minimum 16.9 $\mu\text{g}/\text{m}^3$ concentration was observed at Gadewadi Village.

Sulphur Dioxide (SO₂): The maximum 26.2 $\mu\text{g}/\text{m}^3$ concentration of SO₂ was observed at Maltan while minimum 12.1 $\mu\text{g}/\text{m}^3$ concentration was recorded at Nimboli village.

Oxide of Nitrogen (NO_x); The maximum 34.6 $\mu\text{g}/\text{m}^3$ concentration of NO_x was observed at project site while minimum 23 $\mu\text{g}/\text{m}^3$ concentration was recorded at Gadewadi Village.

Carbon Mono-oxide (CO):The average maximum 8 hourly concentration for CO was found to be 1.6 mg/m^3 at Maltan while minimum concentration was recorded 0.5 mg/m^3 at Ravangaon Village.

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

Noise Level

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

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

Surface water Environment

- **pH:** pH of the all-surface water sample ranges from 7.34 to 7.78.
- **Total Dissolved Solids:** The dissolved solids consist mainly of bicarbonates, carbonates, sulphates, chlorides, nitrates and possibly phosphates of calcium, magnesium, sodium and potassium. The amount of dissolved solids present in water is a consideration for its suitability for domestic use. Results show the ranges of TDS 495 mg/l to 901 mg/l.
- **Biological Oxygen Demand (BOD):** Out of 6 samples, 4 samples show values below detection level and two samples shows BOD less than 3 mg/l.
- **Chemical Oxygen Demand:** The recorded results of COD range from 28 to 34 mg/l.
- **Chloride:** The concentrations of the chlorides of all samples were between 45.5 and 67 mg/lit.
- **Sulphate:** The concentration values ranged from 35 to 84 mg/lit,

Groundwater Environment

- **pH:** The pH is a measure of the activity of the (solvated) hydrogen ion. The range of pH is neutral to slightly alkaline (7.34 to 7.65)
- **Total Dissolved Solids:** The dissolved solids consist mainly of bicarbonates, carbonates, sulphates, chlorides, nitrates and possibly phosphates of calcium, magnesium, sodium and potassium. The amount of dissolved solids present in water in the range of 614 to 818 mg/l.
- **Total Hardness:** The values of the samples analysed are in the of 231 to 346 mg/l
- **Chloride:** The chloride values are in the range on 38.8 to 105 mg/l.
- **Sulphate:** The concentrations of sulphates in the in the range on 24.5 to 74.0 mg/l.

Soil Environment

- The physical properties of soil determine the aeration of the soil and the ability of water to infiltrate and to be held in the soil, Color, Bulk density, Water Holding Capacity etc.
- The soil being of friable consistency, the bulk density & water holding capacity of the soil is in the range of 1 to 1.77 g/cm³ & 45 -49 respectively.
- The pH of the soil in the study area is slightly alkaline to moderately alkaline in reaction having pH is in the range of 7.23-7.88. The (Electrical Conductivity) of the soil extract in the study area is in the range of 267-1623µS/cm which is less than 2 mS/cm

indicating no salinity problem to be expected in the soil. CEC is in between 0.56 to 0.92 meq/100g, moreover it can be interpreted that soil has Moderate productivity & high absorption capacity.

- Analysis shows that the concentration of organic matter is in the range of 0.783 to 1.012% and total organic carbon is in the range of 0.512 to 0.0.823 %. it was observed that Soil samples are Poor to Medium fertile in nature based on organic carbon contents.

Ecology

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

Based on field survey Primary data were generated by preparing a general checklist of the plants encountered in this area. The study shows overall 95 plant species comprising of 48 trees, 23 shrubs, 10 herbs, 6 palms, 3 climbers and 5 grasses in study area. The floristic survey reveals that the study area shows dominance of trees, viz. *Azadirachta indica*, *Acacia nilotica*, *Aegle marmelos*, *Cassia fistula*, *Ziziphus mauritiana* etc.; shrubs viz. *Lantana camara*, *Calatropis sp.*, *Hibiscus rosa-sinensis* *Nyctanthes arbor-tristis* etc.; herbs like *Alternanthera sessilis*, *Argemone mexicana*, *Celosia argentea* etc. However, majority of the forest area is open scrub.

Socio Economic survey:

While dealing study area (10 Km radius from project site) as per secondary data (Population Census 2011) the total population is 72095 in 15196 households. Male population is 37297 and female population is 34798. Highest population in study area is Bhigvan city (7673).

There are 15196 households in the study area and the average size of household is 5 members per household in the study area. The dependent population below 6 years is 8841 (12.3% of the total population) in the study area. The sex ratio of the study area is 933 females per 1000 males. The sex ratio of the study area is higher side as compare to district sex ration of Pune (915).

Questions were asked to respondents to seek their opinions, perceptions and aspirations regarding the project. Opinions are important vehicle through which one could understand the existing mental attitude of people in general and groups, and community in particular.

All the respondents were aware of the project, which reflects that the project proponent has carried out regular consultation with the local peoples. All the respondents are in support of the

project fully, but they need regular flow of information from the point person provided by the community as well as the project person regarding the progress of the project. Their only demand is to give the preference to local people for employment, transporters and raw material suppliers etc.

1.7 Environment Impact and its Mitigation Measures

Air Environment

- ❖ For the 22 TPH boiler, 60 M stack height and ESP will be provided
- ❖ Stack emissions will be regularly monitored by external agencies on periodic basis to check the efficiency of air polluting control devices and necessary action.
- ❖ Online Monitoring system will be installed and connected to CPCB and MPCB server for exiting boiler and will be provided to 22TPH Boiler
- ❖ To control of the airborne fugitive emissions from the ash handling area will be achieved through regular water sprinkling in this area.

The green belt development at ash handling areas will be undertaken

Noise Environment

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

Water Environment

Waste Water Treatment: Fresh Water requirement for proposed expansion will be 317 M³/day.

For treatment of whole stillage, Vasundhara Bio energy has decided to installed Decantation followed by Multiple Effect Evaporation followed by Steam tube bundle dryer to produce Distiller's Dried Grains with Soluble (DDGS).

The whole stillage generation from 90 KLPD MPR distillation will be around 618 M3/day with 7-8 % total solids & subjected to decantation by centrifugation to separate the wet cake and thin stillage. Thus, total thin slop generation will be about 502 M3/day with 4% total solids and wet cake generation will be about 116 MT/day. The 20% thin slop quantity (100 M3/day) will be recycled in process (for slurry preparation) & savings the fresh water requirement for the same quantity.

The average total solids content in thin slop will be 4 % with 502 M3/day. This thin slop will be then fed to stand alone multiple effect evaporation plant for concentration up to 30 % solids. The concentrated thick slop generation after evaporation will be 64 M3/day with 30 % solids. Then, wet cake generated from decantation and concentrated thick slop from evaporation will be mixed together in mingler to produce DWGS containing 30% solids. The DWGS will be fed to steam tube bundle rotary dryer to produce Distillers Dried Grains & Solubles (DDGS). The DDGS 70 MT will be sold as cattle feed. There is good demand for DDGS. In such way Vasundhara Bioenergy can achieved "Zero Spent Wash Discharge".

Solid waste management

Bagasse, coal and Conc. Spent wash will be used for 22 TPH Boiler. Grain will be used as raw material for distillery unit. Press mud will be used for composting and sale to farmer as soil conditioner. Ash will be sale to brick manufacturer.

SI. No.	Details of the solid waste	60KLPD Quantity in T/day	90KLPD Quantity in T/day	Mode of Disposal
1	DDGS – (by product) (Dried distillers' grains with soluble)	30	46	Sale as Cattle Feed, Poultry & Fisheries
2	CPU sludge	1.0	1.5	Used as manure
3	Yeast Sludge	0.2	0.35	Used as manure
4	Boiler Ash	4.6	4.6	Sale to brick Manufacturer

Green belt development plan:

Around 6750 Nos. of trees will be planted over an area of 2.70 acres at the rate of 2500 trees per Ha.

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

Socio Economic Environment

- Health and safety related displays will be exhibited at strategic locations in the industry.
- Workers will be educated and trained in occupational health safety.
- Regular health checkup of the workers will be carried out and health records of individual workers will be maintained.
- Utility rooms provided will be provided with facilities and properly maintained.
- First aid facilities will be provided at different locations. Further first aiders will be trained.
- CSR activities will be implemented

1.8 Environment Monitoring

Environment monitoring is prescribed during pre-construction, construction and operation phase. During operation phase of project it is important to understand the baseline environment status which is caused due to proposed project activity. Environmental monitoring will comply Air, Water, Soil, Ecology, and Noise parameters as per monitoring compliance norms and schedule. All parameters will be tested as per standard tools and methods and obtained results should be compared with CPCB norms.

1.9 Corporate Environment Responsibility (CER)

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

As an additional part of the EMP cost, the proponent proposes to invest 10. Lakh Crores (1% of the project cost of 10 Crores) before commencement of the project, to be considered for implementing the activities in the context of the local scenario of the area.

1.10 Cost for Environment Management Plan

Cost of Environmental Protection Measures

Sr. No.	Environment Aspect	60 KLPD Capital Cost (in Lacs)	Expansion 30KLPD Capital Cost (in Lacs)	60 KLPD Recurring Cost (in Lacs)	Expansion 30KLPD Recurring Cost (in Lacs)
1	Air Pollution Control (Stack & ESP)	200	-	10	-
2	CO2 Plant	400	100.00	5	1.5
3	Condensate Polishing Unit	200	25.00	10	5.0
4	MEE	450	25.00	5	-
5	Dryer, Silo, cooling system & Packing (DWGS dryer)	600	100.00	10	5.0
6	Green Belt Development	25	0	4.5	-
7	Rain water Harvesting	15	0	2	-
8	Environment Monitoring (Online Monitoring System)	15	0	5	-
9	Solid Waste Management	10	5.0	5	-
10	Occupational Health	25	5.0	5	2.5
Total		1940	260.00	61.5	13.5