EXECUTIVE SUMMARY

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT

FOR

PROPOSED EXPANSION OF SUGAR UNIT FROM 4500 TCD TO 7500 TCD, 14 MW TO 32 MW COGENERATION PROJECT AND 45 KLPD TO 100 KLPD DISTILLERY PROJECT AT RAVADEWADI TAL. SHIRUR, DISTRICT PUNE, MAHARASHTRA STATE

PROJECT PROPONENT

M/s Parag Agro Foods & Allied Products Private Limited (PAFAPPL) A/P – Ravadewadi, Tal. – Shirur,

District – Pune, Maharashtra

EXECUTIVE SUMMARY

1.1 Introduction

M/s Parag Agro Foods & Allied Products Private Limited is a private registered sugar factory located at Gut No. 13, 14, 15/1, 15/2, 83/1, 341/2, 342, 343/2/A, 346, 347, 349, 350, 351, 352, 353, 355/1, 428/1, Ravadewadi, Tal. – Shirur, District – Pune, Maharashtra. The factory is duly registered under Companies Act, 1956 as Private Limited Company having Registration No. U15122MH2013PTC244143 dated 07th June, 2013.

M/s. Parag Agro Foods & Allied Products Private Limited (PAFPPL) proposes to expand its existing integrated sugar, cogeneration power project & Distillery at Ravadewadi, Tal. – Shirur, District – Pune, Maharashtra. The factory was established for a capacity of 4500TCD Sugar, 14MW Cogen plant and 45KLPD distillery construction work is in progress. PAFPPL proposes to expand sugar crushing capacity from 4500 to 7500TCD, 14 to 32MW Cogen power plant and distillery from 45 to 100KLPD.

The Ministry of Environment and Forests and Climate Change (MoEF&CC) Government of India has issued an EIA Notification, S.O. 1533 dated 14th September 2006 and its amendments Prior Environmental Clearance (EC) from the EIA Authorities is mandatory for the establishment of projects/activities listed in the schedule of above Notification Sugar Industry > 5000 TCD cane crushing capacity are categorized under 5 (j) of schedule of activities Category “B’. Cogeneration power projects of 32 MW based on biomass as bagasse and using auxiliary fuel such as coal/lignite/petroleum products 15% are categorized under 1(d) of schedule of activities, category ‘B’. Similarly all molasses based distillery units are categorized under 5(g) of schedule of activities, category ‘B’

Accordingly, the project proponent has submitted prescribed application along with pre-feasibility report to the SEIAA, Maharashtra on dated 15th April 2021. Standard Terms of Reference was granted by SEIAA, Maharashtra on 19th April 2021 vide letter no. SIA/MH/IND2/62696/2021 dated 19th April 2021. Based approved TOR, Draft EIA and EMP report was prepared and submitted for public consultation to Maharashtra pollution Control Board.

1.2 Project Location

PAFAPPL is a private registered sugar factory located at Gut No. 13, 14, 15/1, 15/2, 83/1, 341/2,
342, 343/2/A, 346, 347, 349, 350, 351, 352, 353, 355/1, 428/1, Ravadewadi Tal. Shirur, District
Pune, Maharashtra.

1.3 Project Description

PAFAPPL located at Ravadewadi Tal. Shirur, District Pune, Maharashtra has proposed for expansion of Sugar Unit 4500 TCD to 7500 TCD, Cogeneration Plant 14 MW to 32 MW And Distillery Project 45 KLPD to 100 KLPD. The total plot area of the project is 209450 Sq.m.

Table 1. Project information in brief

Sr. No.	Particulars	Details
1.	Name of Industry	M/s. Parag Agro Foods & Allied Products Private Limited (PAFAPPL)
2.	Address	Gut No. 13, 14, 15/1, 15/2, 83/1, 341/2, 342, 343/2/A, 346, 347, 349, 350, 351, 352, 353, 355/1, 428/1, Ravadewadi, Tal. Shirur, District – Pune, Maharashtra
3.	Area of the project	Total Area : 20.94 ha (209450 Sq.m) Green Belt :6.91 ha
4.	Latitude & Longitude	18°52'26.49"N 74°12'43.29"E.
5.	Plant Capacity	**Existing:** • Sugar: 4500 TCD • Cogeneration 14 MW • Distillery 45 KLPD (Construction work in progress) **Expansion:** • Sugar: 3000 TCD • Cogeneration: 18 MW • Distillery: 55 KLPD +2.5 MW

		After expansion: • Sugar 7500TCD • Cogeneration: 32 MW • Distillery: 100 KLPD + 2.5 MW
6.	Products with Quantity	**Existing:** • Sugar: 82800 MT/annum • Power 14 MW • Distillery 45 KLPD (RS/ENA/AA) **Expansion:** • Sugar: 55200 MT /annum • Power: 18 MW • Distillery: 55 KLPD (RS/ENA/AA) +2.5 MW After expansion: • Sugar 138000 MT/annum • Cogeneration: 32 MW • Distillery: 100 KLPD (RS/ENA/AA) +2.5 MW
7.	Raw Material	**Existing**: • Sugarcane: 1200000MT/annum • Bagasse: 144653 MT /annum • C- Molasses: 57198 MT/Y **After Expansion** • Sugarcane: 1200000MT/annum • Bagasse: 298253 MT /annum • B-Molasses: 78000.0MT/Y (own Sugar unit) • C- molasses: 12900 MT/Y (Procured)
8.	Boiler capacity	• Existing Boiler; 85 TPH • Proposed Boiler -100TPH • Incineration Boiler – 16 TPH boiler will be upgraded 22TPH
9.	D.G set	500KVA
10.	Water Source	Ghod River
11.	Water requirement	**Existing**

		• Existing sugar & cogeneration unit water requirement is 600 m3/day • For 45 KLPD distillery: 378 m3/day • Domestic : 50 m3/day **After expansion:** • After expansion sugar and cogeneration water requirement will be 1222. m3/day (Sugar 600 M3/day & 622 Cogeneration M3/day) • After expansion 100 KLPD: C- Molasses 566 m3/day and B- heavy Molasses 496 m3/day • Domestic: 53.0 m3/day
12.	Water waste generation	**Existing** • Existing Effluent Treatment Plant capacity: 500 M3/day • 45 KLPD distillery : 356 m3/day spent wash **After expansion:** • After sugar and cogeneration ETP capacity: 1200m3/day • After expansion Distillery: 397 m3/day (B- heavy and 800 m3/day C- molasses) spent wash
13.	Power requirement	• Sugar 7.50 MW • Co-gen –2.88 MW • Distillery – 2375KW
14.	Steam requirement	• Sugar – 156.82 TPH • Distillery – 21.7TPH
15.	Fuel requirement	• Existing 85 TPH Boiler : Bagasse: 144653 MT /annum • Proposed 100 TPH Boiler : Bagasse: 153600 MT /annum
16.	APC Details	• Existing 85 TPH Boiler : 72 m stack height and ESP • Proposed 100 TPH Boiler 80m stack height and ESP • Distillery 16 TPH boiler will be upgraded to 22 TPH : existing 72 m stack height and ESP ESP system shall be provided for control of SPM level of 50mg /m3 in Exit flue gases.
17.	Man Power	• Sugar & Co –gen : 156 Nos • Distillery : 74 Nos

18.	Project Cost	• Sugar expansion: 63.04Cr • Cogeneration : 107.29Cr • Distillery : 127.97Cr

1.4 Basic Requirement

i. Land: Total available land is 20.94 ha. The available land is adequate for the proposed expansion of the unit. The project will be accommodated in the existing factory premises.

ii. Raw Material:

Sugar Cane: -

The cane potential and irrigation facilities in the command area are adequate and will ensure sustained cane availability for the proposed Expansion project.

- Existing cane requirement is 720000 MT
- For expansion cane requirement will be 480000 MT
- Total cane requirement after expansion: 1200000 MT

Cogeneration:-

The proposed Cogen power plant will be designed for average crushing rate of 7500 TCD (340.91TCH) on 22-hour basis. The Cogen power plant will operate on bagasse during season and on saved bagasse during off-season

- Bagasse generation – 95.45TPH
- Bagasse consumed by boilers – 92.72TPH
- Bagasse saved for off season – 28147MT

Distillery:-

The requirement and estimated rate of B-Heavy and C- Heavy molasses is given in table is as under-

- C- Molasses – 45697.0MT/Y
- B-Heavy Molasses – 52008.0MT/Y

iii. Water Requirement: Fresh:- Water source is Ghod River. Permission of Irrigation Department is obtained

Expansion of Sugar Plant & Cogeneration

- Existing sugar & cogeneration unit water requirement is 600 m3/day
- After expansion sugar and cogeneration water requirement will be 1222. m^3/day (Sugar 600 M^3/day & 622 Cogeneration M^3/day)

- Domestic : 50.0 m^3/day

Expansion of Distillery Unit

- For 45 KLPD distillery: 378m^3/day
- After expansion 100 KLPD: C- Molasses 566 m^3/day and B- heavy Molasses 496 m^3/day
- Domestic: 53.0 m^3/day

iv. Power: Project has existing 85TPH boiler. Further, industry has proposed 100 TPH Boiler for cogeneration. The steam and power requirement for the proposed ethanol plant will be made available by upgrading 16TPH boiler to 22 TPH boiler.

v. Fuel: Slop and bagasse will be used as fuel.

vi. Man Power: Taking existing manpower into consideration, for proposed expansion total manpower requirement for Sugar & Co-gen shall be 156 persons & that for Distillery is 74 Nos.

1.5 Project Schedule & Cost

Proposed Schedule for Approval & Implementation

The manufacturing of products has planned to start after obtaining environmental clearance.

Project Cost

The Capital cost of the proposed project is

- Sugar expansion: 63.04Cr
- Cogeneration: 107.29Cr
- Distillery: 127.97Cr

1.6 Manufacturing Process

Sugar Manufacturer

Sugarcane is weighed, washed, cut, shredded and fed to series of mills. Sugarcane juice is extracted and bagasse's are separated. Juice is heated and clarified. Mud is separated out and clarified juice is subjected to multiple effects evaporators. Concentrated syrup is fed to vacuum pan where syrup gets super saturated and fine crystals and mother liquor are separated in centrifuges. Raw sugar is dumped on moving belt where it gets dried before moving to storage. In normal courses main sugar plant boiler will function and fulfill steam requirement of distillery also.

Manufacturing Process is given below:

- Extraction of juice by pressing sugarcane and bagasse is separated

- Boiling the juice to obtained crystals and clarification with mud separation
- Creating raw sugar by spinning crystals in extractor
- Crystallizations and drying sugar
- Packaging the ready sugar

Distillery

There are four major steps in preparation of alcohol. (a) Substrate (feed) preparation for fermentation, (b) Yeast propagation and continuous fermentation, (c) Multi-pressure distillation and (d) Dehydration of RS to anhydrous alcohol or it will be purified to get ENA

1.7 Description of Environment

The area around the proposed Distillery Plant is being surveyed for physical features and existing environmental scenario. The field survey and baseline monitoring has been has been done from the period of February 2021 – April 2021

Environmental Setting of the Study Area: The site is located in the rural area. No other industries are found in the region. Location features of the Study area are given in Table below

Environmental Setting (10 km radius)

Particulars	Details
Latitude	18°52'26.49"N
Longitude	74°12'43.29"E
Site Address	Gut No. 13, 14, 15/1, 15/2, 83/1, 341/2, 342, 343/2/A, 346, 347, 349, 350, 351, 352, 353, 355/1, 428/1, Ravadewadi, Tal. – Shirur, District – Pune, Maharashtra
Nearest Habitation	Kawathe Yemai (4km North West)
Nearest River /Water Body	Ghod River (4km) & Kukadi River (9km
Nearest IMD Observatory	Pune – 60km
Nearest Town	Shirur 16km
Nearest Railway Line	Pune – 52km
Nearest Air Port	Pune – 44km
Approach to site by Road	Kawathe Yemai – Malthan Road
Religious / Historical Place	None

Archaeological monuments	None
Ecological Sensitive Area/ Reserve Forest	None
Seismic Zone	III
Average altitude above mean MSL	601m above MSL
Temperature in °C	The highest temperature is usually observed during the months of April–May and lowest temperature during December/ January. Annual average is 25.2°C
Rain fall in mm	Total annual average: 1,058 mm
Wind velocity	This region is characterized by low to moderate wind velocities. The mean annual velocities are in the range of 4 to 6 Km/h and especially high during pre-monsoon period of June to August.

Conducted baseline monitoring for Air, water, soil & noise for various locations within 10 km

- Ambient Air Quality
- Surface Water
- Ground Water
- Soil
- Noise
- Ecology and Biodiversity
- Socio economic

Ambient air quality of the study area has been assessed during February 2021 – April 2021 through a network of eight ambient air quality stations within an area of 10km region around the project site. PM 10 concentration ranges from 45 to 80 µg/m3. Maximum PM recorded at project site (80 µg/m3) higher level mainly due to vehicular movement and partially industrial activities. PM 2.5 concentration ranges from 20 to 39 µg/m3. SO2 concentration ranges from 11 to 27 µg/m3.NOx concentration ranges from 16 to 40 µg/m3. CO

concentration ranges from 0.5 to 2.5 mg/m3. The concentrations of PM_{10} $PM_{2.5}$, SO_2 NO_x and CO were found within the National Ambient Air Quality Standards (NAAQ).

Noise level was observed at eight different locations in study area. The maximum daytime Leq as well as night time Leq values in Project Site. Levels recorded were 71.7dB(A) and 66.4dB(A) respectively. The maximum values may be attributed towards traffic movements and ancillary industries present in vicinity.

Surface water samples were collected at four locations. At all locations pH is in the range from 7.9 to8.0. DO values are recorded in the range 5.5 to 5.8. BOD values are in the range Below Detectable Limit. Total coliform bacteria are recorded in between 50 to 120 MPN /100 ml. As per CPCB standards water is classified in category B

Ground water samples were collected at Seven locations The analysis results indicate that the pH ranges in between 7. to 8.2, which is well within the specified standard of 6.5 to 8.5. The minimum pH of 7.5 was observed at Takali Haji and the maximum pH of 8.1 was observed at well t two locations. Chlorides were found to be in the range of 21 to 162 mg/l at all locations, the minimum concentration of chlorides (162 mg/l) was observed at Takali Haji whereas the maximum value of 21 mg/l was observed at Garkolwadi. At all locations chloride values are within permissible limit i.e. 250mg/l. Sulphates were found to be in the range of 12 to 104 mg/l. At all locations sulphates values are within the permissible limit i.e. 200mg/l. The Total Dissolved Solids (TDS) concentrations were found to be ranging in between 148 to 832 mg/l.

Soil samples were collected at eight different locations in the study area. All the samples having pH in range of 7.3 to 8.0 . Conductivity of the samples is in between 0.175 to 0.562 mS/cm. The water holding capacity of a soil is a very important agronomic characteristic. All the soil samples shows, the good water holding capacity. Soil Organic Matter also acts the major sink and source of soil carbon. The concentration of the organic matter in the soil is 0.7 to 1.4 %. All the soil samples shows, the good NPK values. The site is located in Zone-III as per the seismic map.

Study area is dry, open, and scrub land & agricultural field. Based on field survey primary data were generated by preparing a general checklist of the plants encountered in this area. The study shows overall 85 plant species comprising of 42 trees, 4 Palms,20 shrubs, 11herbs, 5 grasses and 3 climbers from 77 genera and 36 families. The floristic survey

reveals that the study area is having dominance of trees viz. Acacia nilotica, Azadirachta indica, Ziziphus mauritiana, Cocus nucifera etc,. certain shrubs viz,. Calatropis sp., Hibiscus sp, Lantana camara & Ricinus communis and herbs like Alternanthera sessilis, Argemone Mexicana, Ageratum conyzoides & Celosia argentea, Ocimum sanctum etc.

The project site is located at Ravadewadi Tal. Shirur, District – Pune, Maharashtra. The site is located at rural surroundings and at distance of about 52km from Pune Railway Station, 44km from Pune International Airport, 16 km from Shirur, 4km from river Ghod (flowing from North-West to South-East site).

While dealing study area (10 Km radius from project site) as per secondary data (Population Census 2011) the total population is 72016 in 14348 households. Mail population is 36994 and female population is 35022. Highest population in study area is in Nighoj village (10385) followed by Kawathe village and Takali Haji village.

There are 14348 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 8690 (12.1% of the total population) in the study area. The sex ratio of the study area is 947 females per 1000 males. The sex ratio of the study area is good, as compare to district sex ration of Pune (915)

1.8 Anticipated Environmental Impact and mitigation measures

i. **Water Pollution:**

Sugar and Cogeneration; Effluent generated 1167 M3/day from sugar and cogeneration will be treated in ETP plant having capacity of 1200 M3/day and treated effluent will be used for green belt.

Distillery: Distillery project will be Zero Liquid Discharge unit. No water is discharged from the site to surrounding area. Spent wash generated in proposed project will be concentrated at MEE, then condensate passed through CPU and conc. Spent wash will be burned in Incineration boiler.

As per MoEF&CC guidelines, “Zero Discharge” is mandatory for distillery project. Spent wash is main liquid waste generated from distillery. Spent wash is concentrated in multi-effect evaporator (MEE) to reduce the volume & concentrate. Concentrated spent wash will be used in slop fired boiler as fuel.

ii. Air pollution:

Sr.	Source	Fuel	Emissions	Control Measures
1	Existing 85 TPH Boiler	Bagasse	Particulate Matter, SO_2 and NO_X	72 m stack and ESP is provided
2	Proposed 100 TPH Boiler	Bagasse	Particulate Matter, SO_2 and NO_X	80 m stack height and ESP will be provided
3	Distillery Boiler 16 TPH upgrade to 22 TPH	Bagasse and Conc. Slop	Particulate Matter, SO_2 and NO_X	Existing 72 m stack height and ESP
4	500 KVA	HSD	PM , SO_2 and NO_X	6.0 m stack

iii. Solid waste Management :

No.	Type of waste	Waste & Quantity		Total	Unit	Treatment	Disposal
		Existing	Proposed				
Non Hazardous							
1	Bagasse	216000	144000	360000	TPA	-	Used as fuel in cogeneration
3	Press Mud	30600	20400	51000	TPA	Compost	Sold to farmer
3	Bagasse Ash	3072	2895	5967	TPA	-	Will be sold to brick manufacturer
4	Incineration Boiler Ash	-	9800	9800	TPA	--	Will be sold to brick manufacturer
5	ETP Sludge	1.2	2	3.2	TPD	-	Used as soil conditioner
6	Yeast Sludge		15	15	TPD	-	Burnt in to incineration boiler
Hazardous Waste							
8	5.1- Used Oil	2.5	2.5	5	KL/Yr	-	Burnt in Cogen Boiler

i. **Green Belt Development Plan :** Existing : Total Area 2.3 ha and total 2154 Nos of plants planted and additionally Green belt will be developed on 4.6 ha land, 10000 Nos of plant will be planted in upcoming 5 years

ii. Socio-Economic Environment: The construction of the proposed project is expected to provide temporary indirect employment to a good number of skilled and unskilled workers. The project will contribute to the socio-economic development of the area at the local level in turn reducing migration for employment. Hence the proposed project will have positive impact on the socio-economic environment.

Likely impact of the project on air, water, land, flora-fauna and nearby population is kept very minimal. The emissions in air are controlled by air pollution control equipment like efficient ESP, dampers, ID Fans and tall Stack. Air modelling is done to study Ground Level Concentration. The incremental concentration is very small and resultant concentration is well within limit. There are no endangered species of flora-fauna in study area. Monitoring will be done regularly to keep a watch.

In case of hazardous operation, safety systems are incorporated. There is risk of fire while preparation and storage of alcohol. The study is done for pool fire and appropriate fire fighting equipment is provided throughout the factory premises. Workers are trained for safety and emergency cases.

Identification of hazards in handling, processing and storage of hazardous material and safety system are provided to mitigate the risk. There is risk of fire while preparation and storage of alcohol. The study is carried out for pool fire and appropriate fire-fighting equipment are provided throughout the factory premises. Workers are trained for safety and emergency cases. Precautions suggested by Factory Inspectors, MPCB and Experts are taken into account while preparing the Disaster Management Plan for the factory. Bagasse storage is kept limited due to everyday consumption for own sugar plant.

Disaster management cell and plan is prepared to tackle man-made and natural disaster. People in this cell are trained to face emergency cases. Safety equipment are also provided to workers and installed in the premises. Workers are also trained to avoid accidents during operation.

1.9 Corporate Environment Responsibility

The company has earmarked 1 % of the project cost for “Corporate Environment Responsibility” after taking into account the public consultation and public demand. The table below shows the allotment of funds. The total project cost is Rs.298.3 Crore 1% of the

total cost it becomes Rs. 2.98 crore approx. Company has proposed Rs. 2.98 crore as CER fund. These will be spent within first 5 years

1.10 Environmental Budget

Adequate budgetary provisions have been made by the Company for execution of Environment Management Plan. Below Table gives overall investment on the environmental safeguards and recurring expenditure for successful monitoring and implementation of the control measures.

Environmental Management Budget

S. No.	Environmental Aspect	Capital Expenditure Rs in lakh	Recurring Expenditure Rs in lakh.(per annum)
Construction Phase			
1	Water sprinkling for dust suppression	-	1.0
2	Drinking water and Sanitation facility for workers	5.0	0.50
3	Monitoring of Ambient Air quality for PM_{10}, $PM_{2.5}$, SO_2 and NO_X	-	0.50
4	Monitoring Noise level	-	0.25
5	Health Checkup of worker		0.50
		5.0	2.75
Operation Phase			
1	Air Emission control		
	Stack	90	5
	ESP	110	10
	CO2 Plant	200	5
2	Water & Wastewater management		
	ETP upgradtion	50	15
	MEE	400	10
	Condensate Polishing Unit (CPU)	150	10
3	Solid Waste Management	25	5
4	Green Belt Development	15	5

5	Environment Monitoring (stack, Ambient Air, Water and Soil and Noise) and meteorology	-	4.25
7	Rain Water Harvesting	25	2
9	Health & Safety	5	1
10	Online Monitoring System	15	2
	Total	**1085**	**74.25**