EXECUTIVE SUMMARY (ENGLISH)

For

Proposed Project for 5000 TCD Sugar Plant along with 33.65 MW Co-generation Power Plant and 120 KLPD Distillery/Ethanol Plant

At

M/s. The Gurdaspur Cooperative Sugar Mills Ltd. V.P.O Paniar, Dist. Gurdaspur, Punjab- 143531.

Land/Plot Area: 392545.0 m^2 (97 Acre)

[ToR Letter No: No.IA-J-11011/502/2021-IA-II (I) dated 08th December 2021]

[Schedule 5(g), 5g(a), 1(d) & 5(j) - Category-'A', as per EIA Notification 2006 and amended till date]

[Study Period: December 2021 to February 2022]

APPLICANT

The Gurdaspur Cooperative Sugar Mills Ltd.

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1. INTRODUCTION

The Gurdaspur Co-operative sugar mills Ltd. is a unit of Punjab state federation of Co-operative sugar mills. It is an operating sugar plant with an installed capacity of 2000 TCD to produce white sugar by double sulphitation process. Due to olden technology and age, efficiency of plant and machineries are far behind the current technology leading to potential losses.

In view of the above complications, the unit wishes to dismantle the existing 2000 TCD unit and propose to develop a new 5000 TCD Sugar Plant along with 33.65 MW Co-generation Power Plant and 120 KLPD Distillery/Ethanol Plant at V.P.O Paniar, Dist. Gurdaspur, Punjab.

1.1 Project Location and Magnitude

The Gurdaspur Cooperative Sugar Mills Ltd. is proposing development of a new 5000 TCD Sugar Plant along with 33.65 MW Co-generation Power Plant and 120 KLPD Distillery/Ethanol Plant at V.P.O Paniar, Dist. Gurdaspur, Punjab- 143531. The center co-ordinate of the project site is 32°5'34.63"N Latitude and 75°27'36.14"E Longitude.

The Gurdaspur Sugar Mills is under Large scale unit having total plot area 3,92,545 m^2 and total investment for the proposed project is Rs. 665.24 Crores.

Table 1: Salient Features

S. No.	Particulars	Details
1.	Approx. Geographical Co-ordinates of the project site	**Latitude:** 32°5'34.63"N **Longitude:** 75°27'36.14"E
2.	Nearest Village	Paniar – 1.5 km in E direction
3.	Nearest City	Dinanagar – 3.70 km in N direction
4.	Nearest Highway	NH-54 – 0.02 km in W direction
5.	Nearest Railway station	Gurdaspur – 6.50 km in SW direction
6.	Nearest Airport	Amritsar - 75 km in SW direction
7.	Nearest River	Ravi river – 12.0 km in NW direction
8.	Nearest Sea	None within 10 km radius of project site
9.	National park/ Wildlife sanctuary/ Marine sanctuary/ Reserve forest	Gurdaspur Bird Sanctuary: 6.0 km in W direction
		Lala Mohan Lal National Park: 7.7 km in W direction
10.	Sensitive Receptors	• Columbus Child Care Hospital, Dinanagar – 4.0 km, North direction, • Yash Hospital, Gurdaspur – 4.2 km, South West direction, • Sri Advait Gurukul Heights School Gurdaspur – 5 km, South West direction • Government Primary Smart School, Sherpur – 5.5 km, South West direction
Note: All the above-mentioned distances are the aerial distances from the project site.		

1.2 JUSTIFICATION OF THE PROJECT SITE

- The land for the proposed project is already in the possession of The Gurdaspur Cooperative Sugar Mills Pvt. Ltd.
- The project is very well connected to National Highway no. 54 and Northern Railways
- Easy availability of infrastructure facilities.
- No prime agricultural land / forest land needed to be converted for industrial use.
- Area where proposed site is to be located has no history of natural calamities like floods, cloud burst etc.
- Proximity to raw material suppliers.
- The cane potential and irrigation facilities in the command area are adequate and will ensure sustained cane availability for the proposed project with the extensive experience of farmers in sugar cane cultivation
- The human resource required for the proposed project will be easily available. Also, the same will be met from surrounding areas.

2. PRODUCT & RESOURCE REQUIRMENT

List of proposed products to be manufactured are mentioned in Table – 2 below:

Table 2: List of Proposed Products along with Capacity

S.No.	Products & Co-products	Unit	Quantity
1.	**Sugar Unit (5000 TCD)**		
	Sugar	TPD	525
	Molasses	TPD	250
	Filter Cake	TPD	200
	Bagasse	TPD	1,425
2.	**Power Plant**		
	Co-generation	MW	28
	Spent wash Incineration Boiler based	MW	5.65
3.	**Molasses & Grain Distillery/ Ethanol Unit**		
	Absolute Alcohol	KLPD	120
	Carbon-di-oxide	TPD	93.6
	DDGS	TPD	52.65
	Fusel oil	LPD	131
	Technical Alcohol	LPD	3,930

Table 3: Resource Requirement

S. No.	Description	Details
(i)	**Land**	392545 m^2 (already in possession with Gurdaspur sugar
(ii)	**Water Consumption**	**Construction Phase:** 80 KLD **Operation Phase:** **Domestic:** 50 KLD **Industrial:** 4,603 KLD **Source of Water:** Own Water Reservoir

<table>
<tr><th>S. No.</th><th>Description</th><th>Details</th></tr>
<tr><td rowspan="2">(iii)</td><td>Electricity</td><td>
<table>
<tr><th>Sr. No.</th><th>Unit</th><th>Power Requirement (MW)</th><th>Source</th></tr>
<tr><td>1.</td><td>Sugar Unit</td><td>6.02</td><td>Own 28 MW Co-generation Power Plant</td></tr>
<tr><td>2.</td><td>Co-generation auxiliaries</td><td>2.42</td><td>Punjab State Power Corporation Limited</td></tr>
<tr><td>3.</td><td>Distillery/Ethanol Unit- during C Molasses operation</td><td>3.46</td><td>Own 5.65 MW Co-generation Power Plant</td></tr>
<tr><td>4.</td><td>Distillery/Ethanol Unit- During operation with grain as feedstock</td><td>4.06</td><td>Own 5.65 MW Co-generation Power Plant</td></tr>
</table>
</td></tr>
<tr><td>Backup power</td><td>Sugar Plant and Co-generation Plant: 1 no. D.G. Set (625 kVA)
Distillery/Ethanol plant: 2 nos. D.G. Set (1000 kVA each)</td></tr>
<tr><td>(iv)</td><td>Fuel</td><td>Bagasse: 73 TPH
Concentrated spent wash: 16.71 TPH
HSD: 565 Liter/hr.</td></tr>
<tr><td>(v)</td><td>Man power</td><td>Construction Phase: 100-125 Nos.
Operation Phase: 332 Nos. (Direct-121 Nos. & Indirect- 211 Nos.)</td></tr>
<tr><td>(vi)</td><td>Utility</td><td>Sugar & Cogen plant:
Boiler –1 No.- 145 TPH
Cooling Tower – 01 No. - 80 m^3/hr. (Vertical Crystallisers), 8730 m^3/hr (condenser, TG and boiler), 140 m^3/hr. (Surplus Condensate Cooling towers), 2 No. 6000 m^3/hr. (for Injection water)
Distillery/Ethanol plant:
Boiler – 1 No.- 45 TPH
Cooling Tower – 01 No. - 1600 m^3/hr (Distillation, MSDH), 840 m^3/hr (Fermentation section)</td></tr>
</table>

Figure 1: Layout Plan of the Project Site

3. BASELINE ENVIRONMENTAL STATUS

The baseline environmental quality is assessed through field studies within the impact zone for various components of the environment viz. air, noise, water, soil, biological and socio-economic. All the locations have been selected within 10 km radius from the project site and environmental samples were collected from the selected locations of the study area.

The study was conducted and micrometeorological data were collected for the period December 2021 to February 2022**.** Samples were collected for environmental parameters like ambient air quality, noise, ground water, surface water and soil quality. The analysis was carried out in NABL Approved Laboratory having valid NABL Certificate number TC - 6603, issued on dated 15/11/2019 valid up to 14/11/2021 for testing of water, wastewater, sewage, air, noise and soil.

Sampling locations covered within study area are shown in the **Figure 2.**

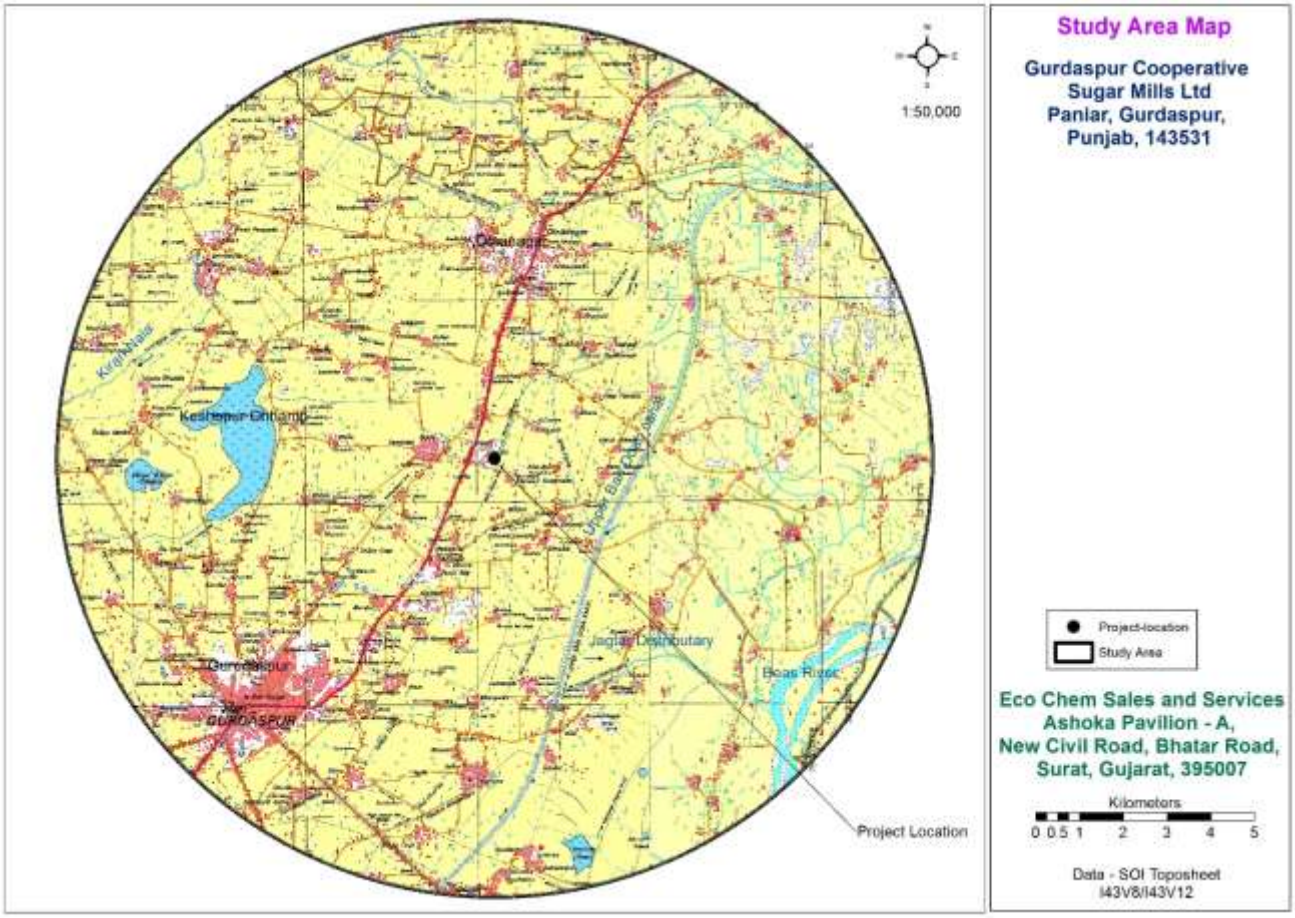

Figure 2: Study Area Map

Table 4: Summary of Baseline Data

Ambient Air Quality Monitoring					
Sr. No.	**Criteria Pollutants**	**Unit**	**Maximum Value**	**Minimum Value**	**Prescribed Standard**
1.	PM_{10}	$\mu g/m^3$	75.1	62.3	100

2.	$PM_{2.5}$	$\mu g/m^3$	45.1	37.7	60
3.	SO_2	$\mu g/m^3$	7.7	4.9	80
4.	NO_2	$\mu g/m^3$	13.6	10.0	80
5.	CO	mg/m^3	<1.0	<1.0	2.0

All the results of ambient air quality parameters have been found within the limit as per NAAQS standards. Based on comparison study of results for tested parameters with NAAQS, it is interpreted that current ambient air quality of studied locations is well within the NAAQS limits and it can be considered satisfactory based on AQI index calculated. The project will be developed on the private land and the nearest habitat to the project lies about 1 km project from the project. Due to the usage of the solid fuel in the boiler, there might be the chances of the incremental change in the current ambient air quality. This interpretation is considered based on the results found for particular locations during the specific study period.

Noise Monitoring

Sr. No.	Parameter	Unit	Maximum Value	Minimum Value
1.	Ld (Day)	dB(A)	61.4	48.6
2.	Ln(Night)	dB(A)	56.4	43.2

The noise sources identified in industrial zone are vehicular traffic, industrial and commercial activities. Based on noise level data obtained during the survey for residential area and industrial area, it is interpreted that noise levels are within the standard norms prescribed by MoEF&CC. The nearby village surrounding to the project site is about 1 km away from the project site and results of the same are found within the prescribed norms during the baseline survey. Due to the project activities, there might be chances of incremental value in the noise levels due to increase in vehicular movement & plant activities. The interpretation can be considered based on the baseline survey conducted during the study period.

Soil Quality and Characteristics

Sr. No.	Parameter	Unit	Maximum Value	Minimum Value
1.	pH	-	8.37	6.92
2.	Electrical Conductivity	dS/m	0.20	0.12
3.	Exchangeable Sodium	meq/100gm	4.2	1.9
4.	Exchangeable Potassium	meq/100gm	15.2	8.2
5.	Total Nitrogen percentage	%	89.60	68.97

Based on soil analysis data it is concluded that soil at the project site is neutral in reaction and moderately saline (EC > 0.8 dS/m). The soils are high in magnesia content, low in phosphorous content and high in potassium status. Soil of Barren Land, Fallow Land and Grass Land is also

having medium concentration of Nitrogen and high availability of Potassium; these soils can also be brought in agricultural purpose after the addition of Phosphorous. The levels of total Fe, Cu, Cr, B and Zn are within the limits as per Dutch Pollutant Standard for Soil. Soil at the project site should be periodically monitored for EC, pH and ESP besides OC, available P and K.

Ground water

Based on comparison study of test results and summary report with drinking water norms, it is interpreted that the ground water samples collected from all the samples are beyond the desirable limit and permissible limits as per IS: 10500:2012 and hence, it should not be used in drinking because the iron has been found more than the prescribed limit for drinking water and it can be used in all other domestic activities like washing, bathing and irrigation. All water can be used in drinking after passing through the RO.

Surface Water

Based on test result data comparison study with CPCB standard, it is interpreted that surface water quality meet with the criteria D and E, it means these water sources can be used for propagation of wild life, fisheries and Irrigation, industrial, cooling, controlled waste disposal. Results of COD and BOD indicate towards the organic contamination in surface water body and the same can be identified from the sampling images. DO level for all the locations are >4.0 mg/L. DO level >4.0 mg/L is considered suitable for the survival of aquatic life and <4.0 mg/L is not considered suitable for aquatic life survival.

Ecology and Biodiversity

The proposed project is coming in the private land. The study area is largely covered with crop land and the crops are taken in all three seasons. Sugarcane, Rice and Maize are taken as kharif crops; Wheat, Gram, Mustard and Rapeseed are taken as rabi crops and Onion, Potato are taken as horticultural crops. The common tree and shrub species found in the study area are *Azadirachta Indica* (Neem), *Syzygium Cumini* (Jamun), *Cassia Fistula* (Amaltas), *Dalbergia Latifolia* (Sisham), *Mangifera Indica* (Mango), *Terminalia Arjuna* (Arjun), *Phyllanthus Emblica* (Amla), *Aegle Marmelos* (Bel), etc. No Schedule- I fauna as per (IWPA) Indian Wildlife Protection Act, 1972 was recorded in the study area during field survey. No endangered or endemic species (as notified in IUCN Red Data Book) are located within the study area. No migratory birds breed in the study area. No Tiger Reserve/ Elephant Corridor/ Turtle breeding place is located within 10 km radius of the study area.

Socio economic

During the primary survey it was observed that in all villages within 10 km radius. The socio-economic analysis of the study area for the observed villages give clear picture of its population, average household size, literacy rate, and sex ratio etc. A part of population is suffering from lack of permanent job to run their day to day life and get basic facilities. The infrastructure and amenities available in the area denote the economic is being of the region. The study area as a whole possesses average infrastructural facilities. The proposed project will contribute towards the improvement of the socio-economic status of the surrounding areas. The socio-economic analysis of the study area shows that in terms of education and employment sectors could be improved. With a high dependency ratio, the overall socio-economic status of the target population could improve with increase in work participation rate. The installation of this project

would lead to direct and indirect employment opportunities. The unskilled and semi-skilled categories of labor will be available from the nearby villages and towns. Further, many of the agricultural laborers will be attracted to take up the steady, round the year employment at industry site. The installation of this project would provide such opportunities for them. Hence, the long-term positive impacts on socio-economic conditions of the area are anticipated.

4. PROBABLE IMPACTS ASSESMENT & MITIGATION MEASURES

Table 5: Environmental Impact and Mitigation Measures

Impact	Mitigation Measures
Air Environment	
• Dust generation during movement of vehicles, and from conveyors of bagasse, press mud, sugar grader, sugar drier, boiler ash generation and handling may have adverse impacts. • Emission from Cogeneration Power Plant may affect the health of people in the vicinity.	• Trucks used for transportation of raw material and products will be closed/ covered with tarpaulin sheet to avoid dust dispersion at site. • Dust generation from conveyors of bagasse, press mud, sugar grader, sugar drier, boiler ash generation and handling will be suitably covered with hood or enclosures to control fugitive emissions • Electrostatic precipitator along with 65 meters stack height for sugar and cogen unit and 83 meters stack height for distillery unit will be installed to reduce pollution within permissible limit. • Usage of respiratory protective equipment by all employees will be ensured.
Water Environment	
• Domestic and Industrial wastewater generated, If not treated properly before disposal, may pollute land and ground water quality and thereby will change the existing characteristics of soil and ground water	• Sewage quantity of 45 KLD will be generated and it shall be treated in STP of 50 KLD capacity. Treated water will be used in gardening within plant premises. • Provision of well-designed internal drainage system with adequate slope connected to ETP. • Total industrial Waste Water Generation will be 2391 KLD, out of which 1320 KLD process water, and 44 KLD Floor/equipment washing will be treated in ETP and 218 KLD RO Reject will be treated in MEE. 565 KLD from boiler/cooling tower blowdown will be treated in RO. MEE Condensate, 347 KLD RO Permeate, and 59 KLD Boiler Condensate will be recycled. Treated effluent from ETP/MEE will be used for irrigation in farm lands of the unit. Thus, there will be a zero liquid discharge.
Solid/Hazardous Waste	
• Press mud & yeast sludge will be generated during product manufacturing which may cause ill effect to human health when in direct contact.	• All the solid / hazardous waste generated will be stored in Hazardous waste storage facility having impervious layer. • Good practice for collection and storage of Press mud & yeast sludge will be followed.

• Frequent and prolonged contact with used oil may cause dermatitis and other skin disorders • Exposure to Bagasse ash from Sugar & Cogen unit & Incineration Boiler ash may cause acute and chronic respiratory health hazard • ETP Sludge if disposed off inadequately will create odour nuisance in nearby area.	• Press mud & yeast sludge ill be used for greenbelt development within premises • Collection and recycling of used oil will be carried out as per SOP. • Used oil will be used as lubricant in plant machineries. • Ash generated from Bagasse & Incineration Boiler will be collected through a closed system and sold to brick manufacturer/ mixed with pressmud and used as manure. • ETP Sludge will be collected and stored separately and used for greenbelt development. • PPEs will be provided to the workers. Hence, there will be no significant impacts on their health.
Noise Environment	
• Major noise generation from Sugar and Cogeneration unit: Mill house, boiling house, sugar house, bagasse & ash handballing, power house, steam turbines and, transportation etc. • Major noise generation from Distillery unit: Fans, blowers and compressors, steam turbines etc. • Noise generation from the above unit may lead to health issues associated with high noise level such as, hearing impairment, hypertension, decreases in working efficiency, Lack of concentration etc.	• Lubrication of moving/ rotating part or component of machineries will be done on regular basis. • Vibrating pads & acoustic enclosure will be provided to high noise generating equipment to control noise level within norms. • All the equipment / machineries operated in the proposed project will be designed/operated in such a way that the noise level in work place shall not exceed 75 dB (A) as per the requirement of Noise Pollution (Regulation and Control) Rules, 2000. • Provision of PPEs like earmuffs / earplug to avoid adverse effects of noise on occupational health and hearing capacity of workers as well as planning of working hours and shift of workers.
Land Use/ Land Cover	
Green belt will enhance the aesthetic value and beautify the landscapes. Regular maintenance of Greenbelt area will be carried out.	
Risks and Hazards	
Fire and explosion, Spillage/ leakage, discharge of chemicals may cause serious burn injury, physical injury and property damage.	• Product Manufacturing will be carried out under the supervision of trained, experience and qualified person. • SOPs will be followed. • First aid kits will be made available at every department. • PPEs like gloves, helmet , safety shoes, safety goggles etc. will be provided to the workers • Credential risk assessment and DMP will be prepared for proposed project.
Ecology and Biodiversity	
Wastewater discharge from the proposed activity can contaminate the	• Domestic wastewater will be treated in Sewage Treatment Plant.

soil and ultimately effect the growth of plants.	• Industrial effluent is/will be treated in the ETP and treated water will be reused in to manufacturing process and remaining will be sent to CETP for further treatment and disposal.
Socio-Economy	
• Direct and indirect employment generation due to proposed expansion and related service sectors. • Local people of nearby villages will benefit from the CER activities to be undertaken by the proponent.	• Total 332 numbers of direct and indirect employees will be generated for proposed project. • Local service providers may be appointed for allied works and services. • All the CER activities will be based on the needs/requirements of the villages.

5. ENVIRONMENT MANAGEMENT PLAN

5.1 Air Environment

- The unit proposes to install one no. of 145 TPH capacity of steam boiler for Sugar Plant & Co-generation Plant. Bagasse will be used as fuel. 65 meters chimney & Electrostatic Precipitator will be installed with the boiler.
- The unit proposes to install one no. of 45 TPH capacity of Slop Fired boiler for Distillery/Ethanol Plant. Concentrated spent wash and Bagasse will be used as fuel. 83 meters chimney & Electrostatic Precipitator will installed with the boiler.
- The unit also proposes to install three numbers of D.G. sets (2 nos. of 1000-kVA capacity each+ 1 no. of 625-kVA capacity) as stand by. Height of chimney will be 6.5 meters above enclosure.

Table 6: Details of Flue gas Emission

1. Sugar Plant & Co-generation

Sr. No.	Particulars	Details
1.	**Sugar Plant & Co-generation**	
	Capacity of Steam boiler	145 TPH
	Fuel Used	Bagasse
	Fuel Consumption	Bagasse – 55.33 TPH
	APC provided	Electrostatic Precipitator
	Height of chimney	65
2.	**Capacity of D.G set**	625 kVA (Standby)
	Fuel Used	HSD
	Fuel Consumption	135 lit/hr.
	APC provided	Stack height & Exhaust
	Height of Exhaust	6.5 m. above enclosure
	Expected Emission	PM: <150 mg/Nm^3 SOx: <100 ppm NOx: < 50 ppm

2. Distillery/Ethanol Plant

Sr. No.	Particulars	Details
1.	**Distillery/Ethanol Plant**	
	Capacity of Steam boiler- C Molasses based	45 TPH
	Fuel Used	Concentrated spent wash and Bagasse
	Fuel Consumption	Concentrated spent wash – 16.71 TPH along with Bagasse – 8.34 TPH
	APC provided	Electrostatic Precipitator
	Height of chimney	83
or		
2.	**Capacity of Steam boiler- Broken rice based**	45 TPH
	Fuel Used	Bagasse
	Fuel Consumption	Bagasse - 17.64 TPH
	APC provided	Electrostatic Precipitator
	Height of chimney	83
	Capacity of D.G set	2 nos. 1000 kVA each (Standby)
	Fuel Used	HSD
	Fuel Consumption	215 lit/hr. for one D.G set
	APC provided	Stack height & Exhaust
	Height of Exhaust	6.5 m. above enclosure
	Expected Emission	PM: <150 mg/Nm^3 SOx: <100 ppm NOx: < 50 ppm

5.2 Water Environment

Total water requirement will be 4653 KLD (Fresh: 2887 KLD + Recycled: 1766 KLD) which will be met by own water reservoir. Break-up of the water balance is given in table 7 & 8.

Table 7: Water Consumption

S.No.	Particulars	Water Consumption KLD	Remarks
A.	**Domestic**	50	--
B.	**Industrial**		
1.	Processing	120	--
2.	Boiler	166	--
3.	Cooling	4,271	--
4.	Floor/Equipment washing	46	--
	Total Industrial	**4,603**	--
	Total (A+B)	**4,653**	--
C.	**Gardening**	**40**	Treated water from STP will be used

Table 8: Wastewater Generation

S No	Particulars	Waste Water Generation (KLD)
A.	**Domestic**	45
B.	**Industrial**	
1.	Process	1,320
2.	Boiler	59
3.	Cooling Tower	794
4.	WTP waste (MGF Backwash, DM regeneration & RO Reject)	218
5.	**Total**	**2,391**
6.	**Total (A+B)**	**2,436**
7.	MEE Condensate	1,320
8.	RO Permeate	347
9.	Boiler Condensate	59

- Total industrial Waste Water Generation will be 2391 KLD, out of which 1320 KLD process water, and 44 KLD Floor/equipment washing will be treated in ETP and 218 KLD RO Reject will be treated MEE. 565 KLD from boiler/cooling tower blowdown will be treated in RO. MEE Condensate 347 KLD, RO Permeate, and 59 KLD Boiler Condensate will be recycled. Treated effluent from ETP/MEE will be used for irrigation in farm lands of the unit. Thus, there will be a zero liquid discharge.
- Sewage quantity of 45 KLD will be generated and it shall be treated in STP of 50 KLD capacity. Treated water will be used in gardening within plant premises.

5.3 Hazardous/Solid Waste

- All the Solid / Hazardous / Non-Hazardous Waste to be generated at the end of manufacturing process or waste treatment process will be packed separately as per approved packing given by Regulatory Authority and will also store in covered RCC storage pits.
- Management of wastes shall be done as per hazardous and other waste (Management and Trans boundary Movement), Rules 2016 of Environment Protection Act, 1986. Solid / hazardous waste generated from plant is mentioned in Table 9 & 10.

Table 9: Hazardous waste generation

S. No.	Type of Waste	Category	Quantity	Disposal
1.	Used Oil	Sch: I /5.1	9 kL/A	Generation, collection, storage, and used as lubricant in plant machineries

Table 10: Non-hazardous waste generation

S. No.	Type of Waste	Quantity	Disposal
1.	Bagasse Ash	20 TPD	Will be sold to brick manufacturer/ Mixed with pressmud and used as manure
2.	Incineration & Boiler Ash	42 TPD	Will be sold to brick manufacturer/ Mixed with pressmud and used as manure
3.	ETP sludge	1.5 TPD	Will be used for greenbelt

			development within premises
4.	Yeast sludge	6.0 TPD	Will be used for greenbelt development within premises

6. ADDITIONAL STUDY

Additional study Risk Assessment (RA) has been carried out for the proposed project. Public hearing is applicable for the proposed project. The Public Hearing issues of stakeholders will be addressed by the proponent after conducting the Public Hearing and it will be addressed in the Final EIA/EMP report.

The Risk Assessment has been carried out to address major hazards and review the effectiveness of selected safety measures and to expand the safety measures in order to achieve a safety culture at the industry. The Risk Assessment also encompasses Disaster Management Study and Occupational Health & Safety.

7. POST PROJECT MONITORING

Table 11: Post Project Monitoring Plan

S. No.		Particular		Parameter for Monitoring	Frequency of Monitoring
1.		**Air Quality**			
	i.	Ambient Air Quality Monitoring	Two samples in downwind direction at 500 m and 1000 m respectively.	$PM_{2.5}$, PM_{10}, SO_2, $NO_{x,}$	Monthly
			One sample in upwind direction at 500 m		
	ii.	Flue gas Stack Monitoring (Boilers, D.G.Sets)		PM, SO_2, NO_x, CO	Monthly
2.		**Water Quality** (Ground and Surface)		As per IS 10500:2012	Six monthly
3.		**Wastewater Quality** (ETP & STP)		As per CPCB conditions	Monthly
4.		**Noise Quality**			
	a.	Ambient Noise 1. Near Main Gate 2. Near Cogen Plant 3. Near ETP/STP 4. Outside of production Plants		Leq. Levels for Day and Night Time	Monthly
	b.	Sensitive receptors in the vicinity			
5.		**Soil Quality**		Routine Physical and chemical parameters, Organic matter, Moisture content, Chloride ions, Phosphorous, Nitrates, Sulfates and Cations (Al, Fe, Mg, Na, Ca, K) – Min. 4 Nos.	Six monthly

S. No.		Particular	Parameter for Monitoring	Frequency of Monitoring
6.		**Work Zone monitoring**	VOC	Monthly
7.		**Solid/Hazardous waste generation**	Records of quantity of generation, handling, storage and transportation (disposal) of solid and hazardous waste will be maintained.	
8.		**Occupational Health Checkup**	Pre-employment and periodical health checkup for eye test, lung test, hearing capacity, skin test, step test *etc*. of every employee at least once in six months.	
9.		**Greenbelt Development**	Number of plantation (Units), Number of Survived Plants/ Trees, Number of Poor plant/ Trees	Once in a year
10.		**Environmental Statement Form V**	As per MoEFCC guideline	Once in a year
11.		**Consents and Authorization**	Consent to operate under applicable acts	Renewing 90 days before expiry of validity
12.		**Compliance of EC conditions**	Submission of 6 monthly compliance reports	June and December

8. GREENBELT DEVELOPMENT PLAN

Unit will develop 1,37,391 m^2 (35 % of total plot area) greenbelt area within plant premises. Domestic species suitable for the local climatic conditions, perennial and evergreen trees, Air pollution resistive plants shall be considered to be planted in the proposed greenbelt area. Approx. 37,783 Nos. of trees and 75,566 Nos. of Shrubs will be planted within project premises. The greenbelt helps to capture the fugitive emissions and to attenuate the noise generated in the plant apart from improving the aesthetics of the plant site. In order to control the industrial pollutants, dense tree plantations are necessary.

9. RAIN WATER HARVESTING PLAN

Gurdaspur Sugar has decided to installed Rain Water Harvesting system to help reduce fresh water consumption. Storm water network will be designed throughout the site for collection of rooftop as well as internal runoff during the monsoon season. Pipeline and storm water drainage will be connected/ diverted to water harvesting tank without any contamination or after removing impurities i.e. leaves, floating materials, birds drop out etc.

During rainy season, the rainwater will be collected from roofs top in collection tank having 150 kL capacity and the collected water will be used for industrial activities. Average 120 rainy days, average rainfall 1167.8 mm and following basic details have been worked for designing the Rain Water Harvesting System:

S. No.	Area		Particulars
1.	Total Area available for Water Harvesting	:	**Roof Top Areas:** 25274+374.25+361+15173= **41182.25** m^2
2.	Average annual Rainfall	:	1167.8 mm
3.	Total Rain Water that can be harvested per year	:	(41182.25) * (1.1678) * (0.8)= 38,474.11

Total : 38,474.11~ 38,475 m^3

The effectiveness of the drainage system depends on proper cleaning of drainage pipes/channels etc. Regular checking before & during the monsoon will be done to see that none of the drains/drainage facilities are clogged and are efficient to collect the rainwater under rain water harvesting program. The clogged drains will be cleaned up immediately on report of any clogging or blockage.

10. BUDGETARY PROVISIONS FOR EMS

The proposed cost of the project will be Rs. 665.24 Crore. Environment protection will be monitored and implemented by an environment management cell. Unit has allocated about Rs. 1790.24 lakhs towards environmental protection measures. The greenbelt, safety measures and other components of the EMP shall be implemented along with the commissioning of the proposed project.

Table 12: Budget for Environment Management System (EMS)

S. No.	Name of the unit	Capital Cost Rs. Lakhs	Operating cost Rs. Lakhs/Month	Maintenance Cost Rs. Lakhs/Month	Total Recurring Cost Rs. Lakhs/Month
1.0	**Water Environment**				
1.1	Primary, secondary & tertiary ETP	250.00	0.75	0.25	1.00
1.2	STP	75.00	0.50	0.50	1.00
1.4	MEE for concentrated effluent	80.00	10.00	0.75	10.75
1.5	RO plant	75.00	5.00	0.50	5.50
1.6	Laboratory & Monitoring	120.00	0.50	0.50	1.00
	Total Water environment	**600.00**	**16.75**	**2.50**	**19.25**
2.0	**Air Environment**				
2.1	ESP for boiler	150.00	0.75	0.50	1.25
2.2	Scrubber for CO_2	50.00	0.5	0.05	0.55
2.2	Air monitoring	-	1.25	0	1.25
	Total Air environment	**200.0**	**2.50**	**0.55**	**3.05**
3.0	**Hazardous waste**				
3.1	Storage facility	50.0	0	2.0	2.0
	Total	**50.0**	**0**	**2.0**	**2.0**
4.0	**Occupational health and safety**				
4.1	OHC (AC room + stretcher)	25	0	0.25	0.25
4.2	Medical kits, oxygen cylinder & antidotes	15	0.10	0	0.10
4.3	Medical check up	0	1.50	0	1.50
4.4	Safety training, safety equipments like PPE's & Fire equipment like fire extinguishers, fire proximity suits	25	0.50	0	0.50

4.5	Fire hydrant system	75	0	1.50	1.50
4.6	PLC control for process	50	0	0.50	0.50
	Total	**190**	**2.1**	**2.25**	**4.35**
5.0	**Green belt Development**				
5.1	Gardener	0	3.00	0	3.00
5.2	Plants, fencing, rain water harvesting	85.00	0	17.00	17.00
	Total	**85.00**	**3.00**	**17.00**	**20.00**
6.0	**CER Activity**	**665.24**	**-**	**-**	**-**
	Grand Total	**1790.24**	**24.35**	**24.30**	**48.65**

11. SOCIAL WELFARE AND UPLIFTMENT PLAN

Corporate Environment Responsibility (CER) is linked to sustainability and mainly based on the social and environmental consequences. A budget of **Rs. 665.24 Lakhs** i.e. 1 % cost of the proposed project as per OM of MoEFCC vides F. No. 22-65/2017-IA.III dated 01/05/2018 is allocated for Corporate Environment Responsibility (CER) under proposed project and will be implemented in next 5 years nearby village.

Table 13: CER Activities with year wise Budget

S. No.	Particulars	Description	Year					Total
			1	2	3	4	5	
1.	Infrastructure	Development /Repairing of Roads, Provide Drinking water facilities, Contribution in construction of facility in Anganwadi and primary school, etc. at Saidipur, Talwandi and Ghulla Village.	40	40	50	60	60	**250**
2.	Health	Up gradation of Existing Hospital and/or Aarogya Kendra, Organize free health medical checks-up, eye camp, blood donation camp. Provide first aid box and training at Nano Nagal, Bhola and Mokha Village.	30	30	40	40	40	**180**
3.	Environment	Tree plantation with tree guard, Development of garden at Gram panchayat in Talwandi, Ghulla, and Saidipur village	10	10	10	15	15	**60**
4.	Education	Donation in school like computers, books for library, Projector for digital learning, School kits like bags, note books, crayons etc. Organize painting completion at Nano	20	20	20	20	20	**100**

		Nagal, Talwandi and Bhangwan Village.						
5.	Sports	Development of playground at village school and provide sports equipments, Organize vocational training in Bhola and Saidipur Village	10	10	15	20	20.24	**75.24**
		Total (Rs. in Lakhs)	**110**	**110**	**135**	**155**	**155.24**	**665.24**

Note: CER activities will be updated as per the suggestions received during public hearing.

12. CONCLUSIONS

The Gurdaspur Cooperative Sugar Mills Ltd. is proposing development of a new 5000 TCD Sugar Plant along with 33.65 MW Co-generation Power Plant and 120 KLPD Distillery/Ethanol Plant at V.P.O Paniar, Dist. Gurdaspur, Punjab- 143531. The EIA study has been carried out with respect to the Terms of Reference (ToRs) awarded by MoEFCC, New Delhi. All the impacts likely to have an effect on the environment have been identified and efficient/adequate mitigation measures have been proposed for the same.

Considering the probability of likely impacts, the proponent has planned adequate mitigation measures and Environment Management Plan (EMP). The waste generation in form of flue gas, effluent and solid/hazardous waste may have impacts on environmental parameters but the proponent has planned to install most efficient technologies for Zero Effluent Discharge from the plant. Further, the solid/hazardous waste management will be done as per HW (Management, Handling and Transboundary Movement) Rules, 2016. Measures like rainwater harvesting, energy conservation and greenbelt development are also noteworthy. Further, the proponent will also undertake CER activities which shall have beneficial impacts on the socio-economic environment. Looking to the overall project scenario, employment potential and allied development plans; it has been noticed that the proposed project would significantly help in the improvement of the society and nation at large. All the relevant safety norms with latest technology have been incorporated in the proposed project. Hazards and associated risks, safety and security provision associated with the project activities appear to be acceptable. Hence, the project in totality may be considered environmentally safe.