

EXECUTIVE SUMMARY  
FOR  
EXPANSION OF SUGAR MILL (7,000 TCD TO 12,000 TCD) AND  
CO-GENERATION POWER PLANT OF 37 MW  
at  
VILLAGE- RANDHAWA, TEHSIL- DASUYA,  
DISTRICT- HOSHIARPUR, PUNJAB



**(Reference TOR vide letter no. SEIAA/2018/452 dated 09.04.2018)**

PLOT AREA: 170 Acre/68.7 Ha

Current Capacity: 7,000 TCD & Co-gen – 33 MW

**Capacity After Expansion: 12,000 TCD & Co-gen – 37 MW**

Cost of Project: Rs 170 Crore

**Being Developed by:**

**A.B. SUGARS LIMITED**

C-1, Sector-3, Noida, Uttar Pradesh-201301

**Prepared By:**

**M/S PERFECT ENVIRO SOLUTIONS PVT. LTD.**

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## EXECUTIVE SUMMARY

### INTRODUCTION

A B. Sugars Limited (ABSL) is a private sector company with varied businesses. ABSL, formerly known as Guru Teg Bahadur Sugars Ltd., was taken over by Chadda group in the year 1997, having its Sugar plant at Village- Randhawa Tehsil Dasuya, Hoshiarpur District in Punjab.

The existing industry mainly produce Sugar from Sugarcane of different grades and produce 33 MW power from burning of bagasse waste. The proposed project is expansion of Sugar Plant from capacity 7000 TCD to 12000 TCD and Cogeneration Power plant from 33 MW to 37 MW at Village-Randhawa, Tehsil – Dasuya, District- Hoshiarpur, Punjab by M/s A.B. Sugars Limited. The project has already got environmental clearance vide letter no J-11011/764/2007-IA. II (I) dated 03.06.2010 for the capacity of 7000 TCD and cogeneration power plant of 10 MW and 23 MW. The unit has valid consent to operate from Punjab Pollution Control Board (PPCB) vide consent order no. R14HSPCTOW1408673 valid up to 30.03.2019 and is fully compliant and committed.

Now, the unit wishes to expand the capacity of the plant as per the local requirement from 7,000 TCD to 12,000 TCD and Co-generation power plant from 33MW to 37MW.

As the project have primary activity Sugar production, therefore as per EIA Notification. 2006 the project falls under Scheduled 5(j) and Category B. SEIAA/SEAC Punjab has accorded Terms of Reference (TOR) for the proposed project vide TOR number., SEIAA/2018/452 dated 09.04.2018.

### TERMS OF REFERENCE

This Environment Impact Assessment (EIA) study is based on Terms of Reference issued by SEIAA, Punjab vide TOR F. No. SEIAA/2018/452 dated 09.04.2018.

### PROJECT DESCRIPTION

DETAILS	EXISTING	PROPOSED	AFTER EXPANSION
Activity	Sugar Manufacturing Unit and Co-generation power plant		
Plot Area (sqm)	6,87,966 sqm (170 Acres)	-	6,87,966 sqm (170 Acres)
	Sugar Plant Area- 59 acre	-	Sugar Plant Area- 59 acre
Production Capacity	Sugar - 7000 TCD	Sugar - 5000 TCD	Sugar - 12,000 TCD
	Co-generation power plant - 33 MW	Co-generation power plant - 4 MW	Co-generation power plant - 37 MW
Estimated Cost	208 Crore	170 Crore	378 Crore
Employment	217	33	250
Power Requirement	9000 KW	4500 KW	13500 KW
DG Sets	1 x 500 KVA and 1 x 725 KVA	-	1 x 500 KVA and 1 x 725 KVA

Expansion of Sugar Mill from 7,000 TCD to 12,000 TCD by M/s A.B Sugars Ltd

Boiler	80 TPH and 120 TPH	2 X 32 TPH	80 TPH, 120 TPH & 2 x 32 TPH
Air Pollution Control Devices	Stack, Wet Scrubber, Electrostatic Precipitator (ESP)	-	Stack, Wet Scrubber, Electrostatic Precipitator (ESP)
Total Water Requirement	6275 KLD	4296 KLD	10571 KLD
Fresh Water Requirement	1363 KLD	864 KLD	2227 KLD
Waste Water Generation	1870 KLD	1366 KLD	3236 KLD
Water Source	Bore Well	-	Bore Well
Water Pollution Control Devices	STP - 250 KLD ETP - 3500 KLD		STP - 250 KLD ETP - 3500 KLD
Rain Water Harvesting Pit	3 no.	5 no.	8 no.

**PRODUCT**

**A. SUGAR**

S. No	PRODUCT	Existing Qty. (Tonnes/day)	Proposed Qty. (Tonnes/day)	After Expansion (Tonnes/day)
1	L Quality Sugar (31)	77	55	132
2	M Quality Sugar (31)	616	440	1056
3	S Quality Sugar (31)	77	55	132
	<b>Total</b>	<b>770</b>	<b>550</b>	<b>1320</b>

**B. CO- GENERATION POWER PLANT**

S. No	PRODUCT	Existing	Proposed	After Expansion
1.	Selling Power	23 MW	-	23 MW
	Captive Power	10 MW	4 MW	14 MW
	<b>Total Power Generation</b>	<b>33 MW</b>	<b>4 MW</b>	<b>37 MW</b>

## RAW MATERIAL

S.NO	RAW MATERIAL	DAILY CONSUMPTION (Existing)	DAILY CONSUMPTION (Proposed)	DAILY CONSUMPTION (After Expansion)
1	Lime	10.5 MT	7.5 MT	18 MT
2	Sulphur	4.2 MT	5 MT	7.2 MT
3	Biocide	70 kg/day	50 kg/day	120 kg/day
4	Magnafloc	21 kg/day	15 kg/day	36 kg/day
5	Phosphoric Acid	35 kg/day	25 kg/day	60 kg/day
6	Colour Precipitation	100 kg/day	70 kg/day	170 kg/day
7	Sugarcane	7,000 TCD	5,000 TCD	12,000 TCD

## MANUFACTURING PROCESS

- **SUGAR**

(i) **Washing, Cutting of Canes, Shredding:**

- Washing the sugarcane before processing i.e. removing dirty
- Cutting operation is the first operation in industry.
- Shredder is used to remove leaves and undesired solid particles from cane.

(ii) **Milling**

- Milling is process of crushing the sticks of sugar cane to extract the juice.

(iii) **Clarification**

- Raw cane juice is filled in clarifier (conical shape vessel), where phosphoric acid, lime & Sulphur dioxide are mixed with the help of agitator.
- When these chemicals are mixed, suspended and colloidal particles are collect in flock and resulting settled down.
- Neat and clean juice comes out from the upper section of clarifier, sludge and mud are collect in bottom and drainage to rotary filter.

(iv) **Filtration**

Clarified mud from the clarifier further filtered in rotary filter. Mud & sludge are stick on the periphery of rotating drum by the action of section. Solid cake removes from the drum by doctor blade.

(v) **Evaporation**

- Evaporators are used in process industry to concentrate liquids.

(vi) **Pan Boiling**

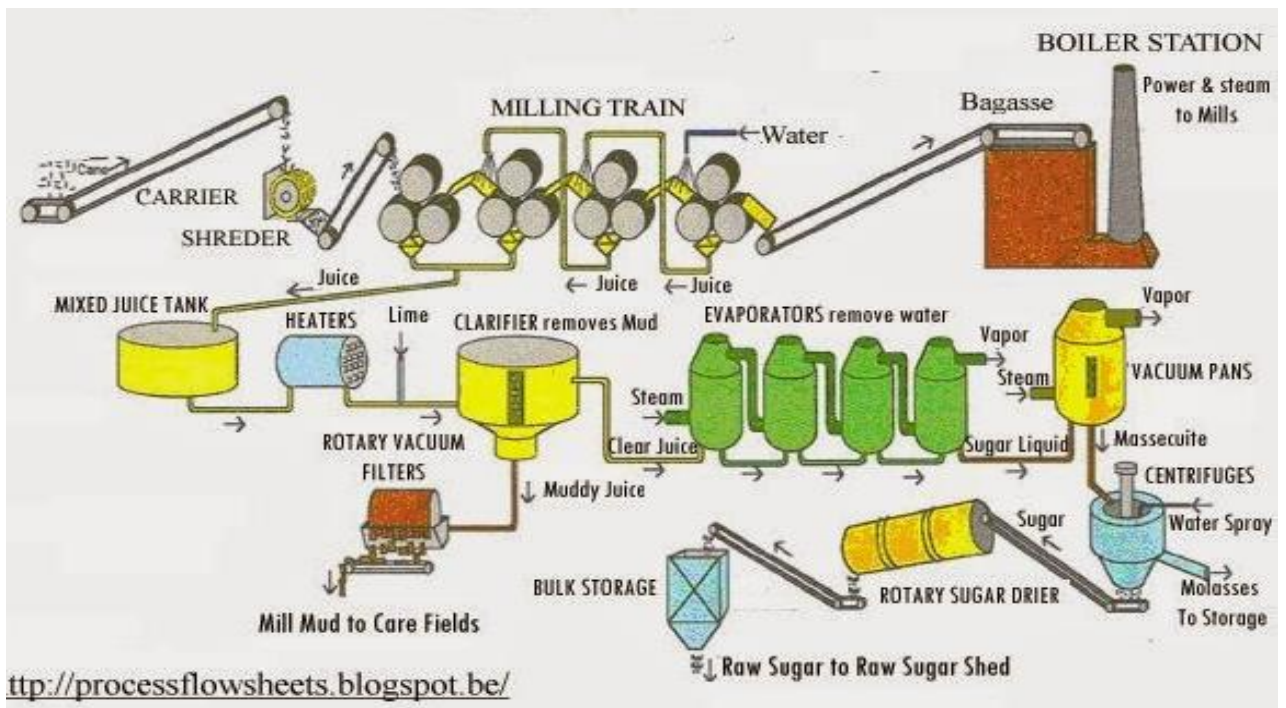
- The syrup is again treated with sulphur dioxide before being sent to the pan station for crystallization of sugar. Crystallization takes place in single-effect vacuum pans, where the syrup is evaporated until saturated with sugar. At this point “seed grain” is added to serve as a nucleus for the sugar crystals, and more syrup is added as water evaporates.

**(vii) Centrifugation**

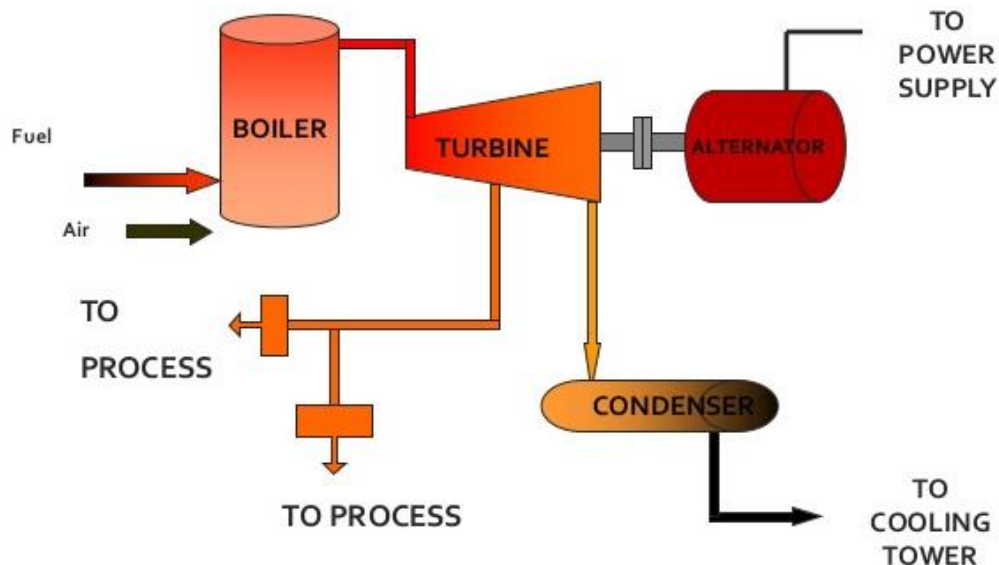
- The massecuite from crystallizer is drawn into revolving machines called centrifuges. The perforated lining retains the sugar crystals, which may be washed with water, if desired. The mother liquor “molasses” passes through the lining because of the centrifugal force exerted and after the sugar is “purged” it is cut down leaving the centrifuge ready for another charge of massecuite.

**(viii) Gradation & Packing**

- The final product in the form of sugar crystal is dropped through pan section and this sugar is graded and picked in 50 kg bags.



- **CO-GENERATION**



## ENVIRONMENTAL SETTING

### Study Period

Monitoring was carried out in the post monsoon Season (October 2017 to December 2017) and additional one-month revalidated data collected from 15th March 2018 to 15th April 2018. The results have been summarized below:

### Ambient Air

The ambient air quality monitoring was carried out at Eight stations namely Onsite (North), Onsite (South) which are in the core zone and Randhawa village, Mangarh Village, Kala Jhingra, Berchha village, Bajwa Village & Panwan Village in the buffer zone.

The mean value of SO<sub>2</sub>, NO<sub>X</sub>, PM<sub>10</sub> & PM<sub>2.5</sub> are within the limits of National ambient air quality standards.

### Noise

The noise quality was monitored at 2 stations within the project site (onsite/core zone) and at 7 stations in buffer zone (Randhawa village, Mangarh Village, Bhana Village, Berchha village, Bajwa Village, SH-24 & NH-1A) was assessed.

At both onsite /core zone, noise levels were within the standard limits of Industrial area.

In Buffer zone, noise levels were within the standard limit of Residential area in day time. Whereas, during night time noise levels at few places were slightly higher than the standard limit of residential areas which is due to local residential activity and vehicular movement at approach road. Noise level at approach road i.e., SH-24, is within limit of Commercial area.

### Water Environment

In Core zone ground water sample from existing 5 bore was collected to access the quality of water available at site. Further in buffer zone, the Ground water was collected from 7 villages. Randhawa Village, Mangarh Village, Bhana village, Kala Jhingra, Berchha village, Bajwa Village & Panwan

Village. Surface water was collected from Bhana Village Pond, Odra Village Pond, Dasua Distributary, Pandav Mansarovar (Dasua) & Kandi Canal to study the chemical parameters.

**In core zone**, 4 borewell parameters shows alkalinity is only higher than the drinking water standards (IS:10500). All other parameters are within the range. The parameters of other 1 borewell shows that Total Hardness, TDS, Chloride, Calcium, Magnesium, Sulphate and alkalinity are higher than the drinking water standards (IS:10500).

**In Buffer zone**, the Ground water shows only Total Hardness, Calcium and Nitrate Nitrogen are higher than the drinking water standards (IS:10500) and other parameters are within limit.

The quality of all Surface water bodies shows that Bhana Village Pond in 'C' category, Odra Village pond in 'B', Dasua distributary in 'C', Pandav Mansarovar in 'B' and Kandi Canal in 'C' as per the CPCB Water Quality Criteria Class of water 'A', 'B', 'C', 'D' & 'E'.

### Soil

The soil quality at location onsite, Randhawa, Mangarh Village, Kala Jhingra, Bhana Village, Kular Village, Bajwa Village and Panwan Village was assessed.

**Core Zone:** The texture of soil is Silty Clay Loam to Loam in Core zone. Primary nutrient profile shows that soil is average fertile as per nutrient profile.

**Buffer Zone:** Primary nutrient profile shows that soil is average in fertility due to the availability of low amount of nitrogen, available potassium. So, the addition of bio fertilizers will enhance the fertility of soil.

### Biological Environment

The Project site have well developed green area having 55-acre area. Site is dominantly occupied by *Eucalyptus globulus*, *Alstonia scholaris*, *Bougainvillea glabra*, *Butia capitata*, *Draceana*, *Phoenix sylvestris*, *Polyalthia longifolia*, *Plumeria rubra*, etc. It was found that the faunal diversity in the core site was limited to Butterflies, insects, animals like rats, monkey, dog, cat etc. and common lizards.

In the Buffer Zone varieties trees, shrubs, herbs, Ornamental plants, weed and grasses such as *Azardirachta indica*, *Polyalthia longifolia*, *Callistemon lanceolatus*, *Hamelia patens*, *Cynodon dactylon* etc

There are three schedule I Species found in buffer zone namely *Pavo cristatus* (Peafowl), and *Manis crassicaudata* (Indian Pangolin).

### Socio-economic Environment

A total of 195 villages and two urban area in Hoshiarpur district falls within the study area of 10 Km. The total population of the study area is 164243 constituting 35485 households. The sex ratio of the study area as per census 2011 records at 965, whereas the sex ratio of the districts Hoshiarpur involved is 961. The total proportion of rural & urban literate within the study area is 85.37% & 85.96% of total population.

## ANTICIPATED IMPACT AND MITIGATION AND ENVIRONMENT MANAGEMENT PLAN

### Ambient Air

Vehicles used in transportation of machineries will be kept fully covered & have PUC certificate. Provision for sprinkling water will be made to reduce dust emissions during the installation phase. The major source of air pollutants in the plant during operation phase is Boiler and DG Sets. 120



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TPH and 80 TPH boiler installed with ESP and wet scrubber with proper stack height as per CPCB norms. Same shall be done for the proposed Boilers of capacity 2x32 TPH. The fuel in the boiler is bagasse which contains very less amount of Nox and Sox. DG sets of capacity 1x750 KVA & 1 x 500 KVA has been installed with 6m stack height above the shed height. Ash generated from the Boiler is being transported to disposal site after sprinkling of ash with water in order to suppress the ash and avoid air emission.

### **Odour Control**

To avoid odour of Press mud, it will be directly send to the brick manufactures & farmers without storing in the premises. Green development is done within the plant premises.

### **Water Environment**

2 KLD of water will be required during construction phase which shall be fulfilled from existing Borewell supply. During operation phase, the existing water consumption is around **6275 KLD** and after expansion it is estimated as **10571 KLD**. In existing unit, the present total waste water generation from Unit is 1870 KLD including 120 KLD of domestic waste water. Process water is being treated ETP of 3500 KLD & domestic waste waters in STP of 250 KLD. After expansion, total waste water generation will be 3236 KLD including 120 KLD of domestic waste water. The capacity of STP & ETP will remain the same as it will suffice for the treatment of increased waste water. Ground water is being abstracted. Water level in the area is 20-25m. 3 no. of Rainwater harvesting pit are already installed to recharge the ground water and 5 no. of rainwater harvesting are proposed. Water content from cane and treated water from treatment facility is being used to reduce fresh water requirement.

### **Land / Soil**

This is expansion of existing Sugar Plant on the same plot area i.e., 6,87,966 sqm or 170. The land use of the area is already being changed to industrial unit. Therefore, there will be no further change in existing Land use. Ash generated from the Boiler is being disposed to the 7-acre allocated land for safe disposal. The ash content in Bagasse is less than 2%. Due to high potash content in the Bagasse ash suits its use as good manure, so there is no adverse effect on the land

### **Noise Levels**

Regular checking of Vehicles, construction/installation work is restricted during day time. Vehicles will be allowed in the unit during day time and will have a defined track which would have restricted movement of workers. DG sets of 1 x 500 KVA & 1 x 725 KVA have been installed acoustically enclose. Areas of high machinery operation will be having enclosures and ear-muffs. Regular maintenance of machinery will be done.

### **Solid Waste**

Waste generated during the construction phase will be domestic only which will be disposed to MSW site. During operation phase after expansion, 24 kg/day biodegradable waste will be generated which will be treated in vermicomposting. 4 kg/day of recyclable waste will be generated which will be given to approved recycler.

- Bagasse generated of 3360 Tons/day (Existing: 1960 Tons/day & Proposed: 1400 Tons/day) is being used as fuel in the boiler for producing steam and same shall be done after proposed expansion to generate more steam required for the process and power generation.
- Molasses generated of 540 Tons/day (Existing: 315 Tons/day & Proposed: 225 Tons/day)



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from clarification process is being used in distillery for alcohol production present in the premises. Molasses acts as a raw material for ethanol production.

- After expansion, press mud generated 504 Tons/day (Existing: 294 Tons/day & Proposed: 210 Tons/day) shall be given to the farmers and brick manufacturers.

Approximately 2000 Kg/day (Existing: 1100Kg/day and Proposed: 900 Kg/day) of ETP sludge shall be generated after expansion. It shall be sent to authorized TSDF.

### **Flora and fauna**

The green area in the plot is 55 acres (32.3%). Green belt has already been developed at the periphery and same shall be maintained after expansion.

The project will not displace any fauna. There are no toxic releases from the plant. Emissions from Boiler are being channeled to ESP, wet scrubber and adequate stack height to control the fugitive emission. Raw material is being transported in closed trucks and the finished product shall be used in the adjacent plant of the complex. There will be no discharge of wastewater on any existing water body or land.

### **Socio-economic environment**

There will be no displacement or immigration of the human population due to the proposed project. Positive impact due to Increase in employment as it will lead to better economic condition of people in the area. Due to less distance from the farms they will get good price of cane and will get press mud to be used as nutrients on farms. There will be overall development of the area. Waste of Sugar cane i.e., Bagasse will be used for power generation, which will directly benefit to the state. Power shortage is crucial issue in the nearby area, 20 MW of the power generated is being sold out.

### **OCCUPATIONAL HEALTH AND SAFETY**

As it is Sugar mill, it poses very less risks to personnel and environment. For mitigation of the various hazards, all necessary measures will be taken. Some of them are –

- Periodic health check-up for workers.
- Detailed Risk Assessment study will be carried out for the unit.
- The Manufacture, Storage and Import of Hazardous Substances Rules 1989 will be followed with respect to hazardous chemicals used in the unit.
- Proper training shall be provided to all personnel in the unit for safety, first aid and emergency measures and various operations of the unit.
- The EHS (Environment, Health and Safety) division of the unit shall handle all safety and health aspects.
- Personal protective equipment shall be provided to all personnel where required.
- Onsite and offsite emergency planning shall be done to be prepared for natural and man-made disasters.

### **PROJECT BENEFITS**

Sugar manufacturing Industry is a large and growing domestic market. There will be economic benefit due to selling of products all over India. After expansion the increased demand of

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customers shall be fulfilled. Due to less distance from the farms they will get good price of cane and will get press mud to be used as nutrients on farms. Molasses waste from process will be used in the production of Alcohol. Waste of Sugar cane i.e., Bagasse will be used for power generation, which will directly benefit to the state. Bagasse based cogeneration conserves fossil fuels and is eco-friendly as pollutants are negligible. Power shortage is crucial issue in the nearby area, 20 MW of the power generated is being sell out.

### Corporate Social Responsibility

As per CER office memorandum of MOEF dated 1.5.2018, the project cost for expansion part is Rs 170 Cr, hence the industry has to spend 0.75% of the cost of expansion on CER activities. However, as per condition of TOR, company will spend 2% of project cost on Enterprise Social Commitment (ESR).

The activities proposed by the industry, seeing the requirement of the project in the surrounding areas are as follows:

- **Skill Development Centers:** A provision of Skill development center will be made in village Randhawa, so that many more people can be trained in various sectors like driving, repair work and farming. The training center will become a source of income to trainers as well as develop many young blood of the nearby villages.
- **Clean Drinking water facility:** A provision of 5000 Lt Tank will be made on the water coolers near the village Panchayat area of four villages. This will cater drinking water requirement of the village for a day.
- **Solar Light:** A provision of 20 no. standalone solar light poles will be made in Parks and road side street lighting.

### COST OF EMP

The cost of project is estimated to be about Rs. 170 crores. The company has already spent Rs. **372 lacs** and proposed cost is. Rs. **57.0 lacs** of capital cost towards EMP. The recurring cost after expansion will be **Rs. 67.0 lacs/year** on Environment Management Plan.

### CONCLUSIONS

Thus, it can be concluded on a positive note that after the implementation of the mitigation measures and Environmental Management Plan, the normal operation of the project will have negligible impact on environment.