

EXECUTIVE SUMMARY

OF

ENVIRONMENT IMPACT ASSESSMENT

FOR

EXPANSION OF SUGARCANE CRUSHING CAPACITY FROM 8,500 TCD TO 12,000 TCD AND CO-GEN POWER PLANT CAPACITY FROM 40 MW TO 55.5 MW

BY

**M/s. SHRI PRABHULINGESHWAR SUGARS AND
CHEMICALS LIMITED**

AT

SIDDAPUR VILLAGE, JAMAKHANDI TALUK, BAGALKOT DISTRICT - 587301

PREPARED BY:



SAMRAKSHAN

F- 4, I Floor, SwastikManandi Arcade,
S C Road, Sheshadripuram,
Bangalore - 560 020

Email id – samrakshanblr@gmail.com

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SUBMITTED TO:

KARNATAKA STATE POLLUTION CONTROL BOARD

“Parisara Bhavan”, #49, Church Street, Bangalore – 560001

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DECEMBER 2020

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CHAPTER 1**PROJECT DESCRIPTION****1.1 PREAMBLE**

M/s. Shri Prabhulingeshwar Sugars and Chemicals Ltd., (SPLSC) is a registered company under companies Act. It has a registered office at “SPLSC”, Siddapur Village -587301, Jamakhandi Taluk, Bagalkot District, Karnataka. The industry was established in the year 1999 at Survey No’s. 49/2B/1, 49/2B/2, 87, 101/1+2/3, 99/1B, 99/2, 100/1, 100/2, 104/2A, 104/1, 104/2B, 271/4, 365/4, 95/2B, 96/2, 98/1B, 98/2, 98/3B, 108/2C, 109/2B, 112/1B, 112/2A, 113/1C, 117/1A/3, 117/1B/3, 117/2C, 108/2D, 107/3 and part of Siddapur Village, Jamakhandi Taluk, Bagalkot District – 587301 in Karnataka State with Sugarcane plant of capacity 3,500 TCD and Co-gen power plant of capacity 17.5 MW. The total extent of the land is 181 Acres 20 Guntas.

The industry had obtained Environmental Clearance from SEIAA, Karnataka vide letter no. SEIAA 20 IND 2007 dated 17.9.2008 for expansion of sugarcane crushing capacity from 3,500 TCD to 8,500 TCD and Co-gen Power Plant from 17.5 MW to 40 MW. The industry had obtained Consent for establishment from the Karnataka State Pollution Control Board for the abovementioned capacity and is operating with a valid consent issued under the Water act and the Air Act and the same is valid up to 30.6.2021.

1.2 PRODUCTS WITH PRODUCTION CAPACITIES

The proposed expansion is planned within the existing factory. The details of existing and proposed capacities are shown in Table 1.1.

Table 1.1: Details of existing and proposed capacities

SI No	Product/ activity	Production Capacity		
		Existing	Proposed Expansion	Total (After expansion)
1	Sugar	8,500TPD	3,500 TPD	12,000 TPD
2	Co-gen Power Plant	40 MW	15.5 MW	55.5 MW

The project falls under schedule 5(j) & 1(d) and Category-B1 of the EIA Notification dated 14-09-2006 issued by The Ministry of Environment, Forests & Climate Change (MoEF&CC), Government of India. For expansion of Sugar Plant and Co-gen Plant, prior Environmental Clearance is required. It is also required to obtain Consent for Expansion under the Water Act & the Air Act from State Pollution Control Board.

For seeking prior Environmental Clearance for expansion, industry made an application in Form-1 along with pre-feasibility report to State Environment Impact Assessment Authority, Karnataka (SEIAA) on 09.05.2019. The proposal was appraised by State Environmental Assessment Committee (SEAC) on 10th July 2019. The State Level Expert Appraisal Committee, Karnataka, communicated the Terms of Reference (TOR) for the study and preparation of EIA report vide letter No. SEIAA/21/IND/2019 dated 16-09-2019.

1.3 MANUFACTURING PROCESS

1.3.1 Sugar Manufacturing

Sugarcane is the main raw material. Sugar cane is obtained from the farmers within 40 km radius. Sugarcane is crushed in Sugar mill and the juice is sent for Clarification. Clarified juice is decanted out and sent for evaporation through the Multiple Effect Evaporators (MEE) to obtain concentrated syrup called massecuite. This syrup is crystallized and cooled to form sugar crystals. Sugar crystals are separated from mother liquor in high-speed centrifuge. Sugar thus separated is sent to driers which are graded, bagged and stored for shipment. Non crystallizable matter from the syrup, called the molasses is sent to storage tanks. Figure 1.1 shows flow chart of Sugar process.

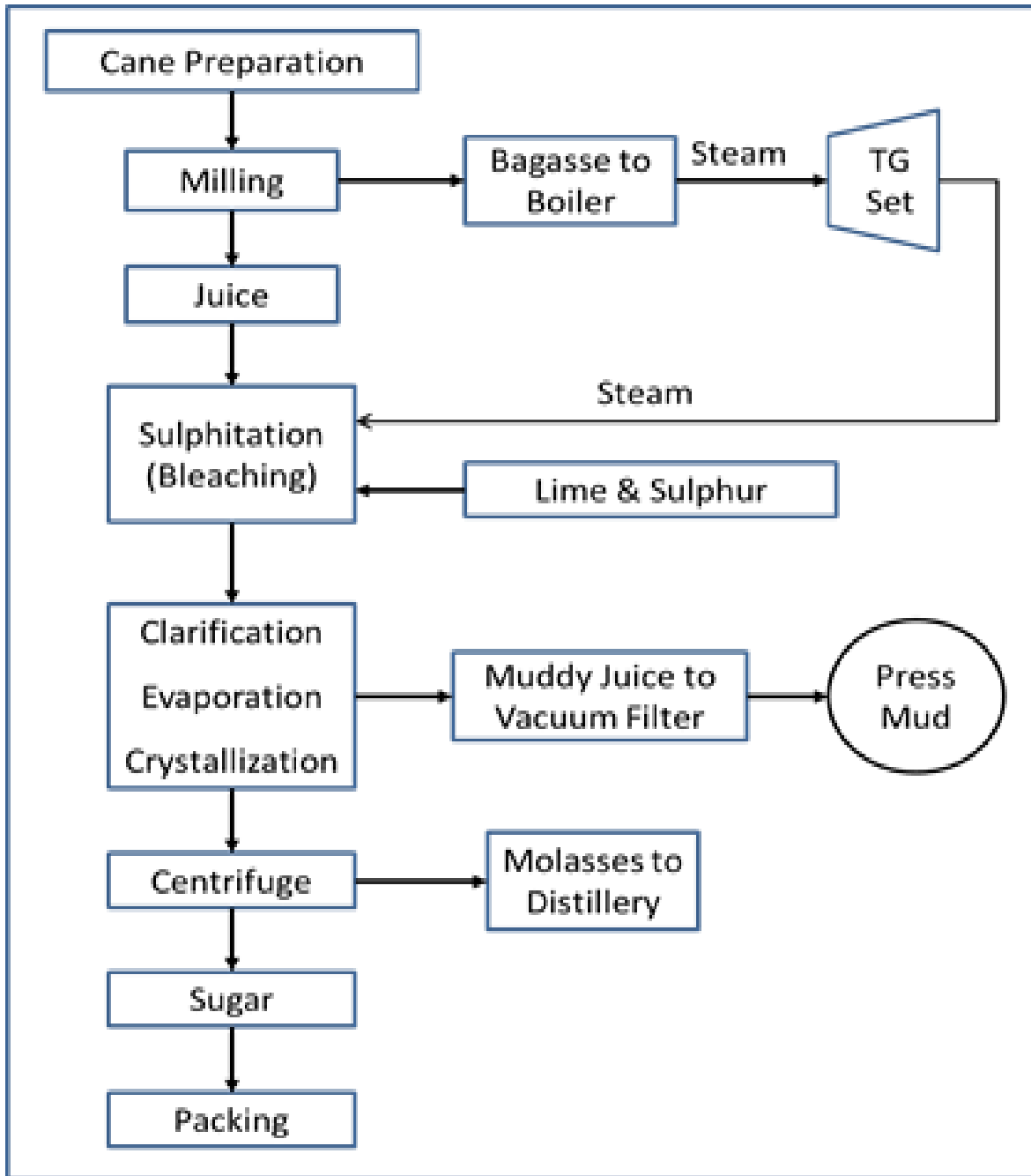


Figure 1.1: Sugar process typical flow chart

1.3.2 Power Generation

Steam is required for both power and sugar plant. The boiler is fired with the bagasse generated in the sugar plant. The flue gas from the boiler is passed through Electrostatic Precipitator (ESP). The steam from the boiler is passed through steam turbine. During crushing, steam is exhausted from the turbine and is used in sugar plant to meet its process requirement. Figure 1.2 shows flow chart of Co-generation.

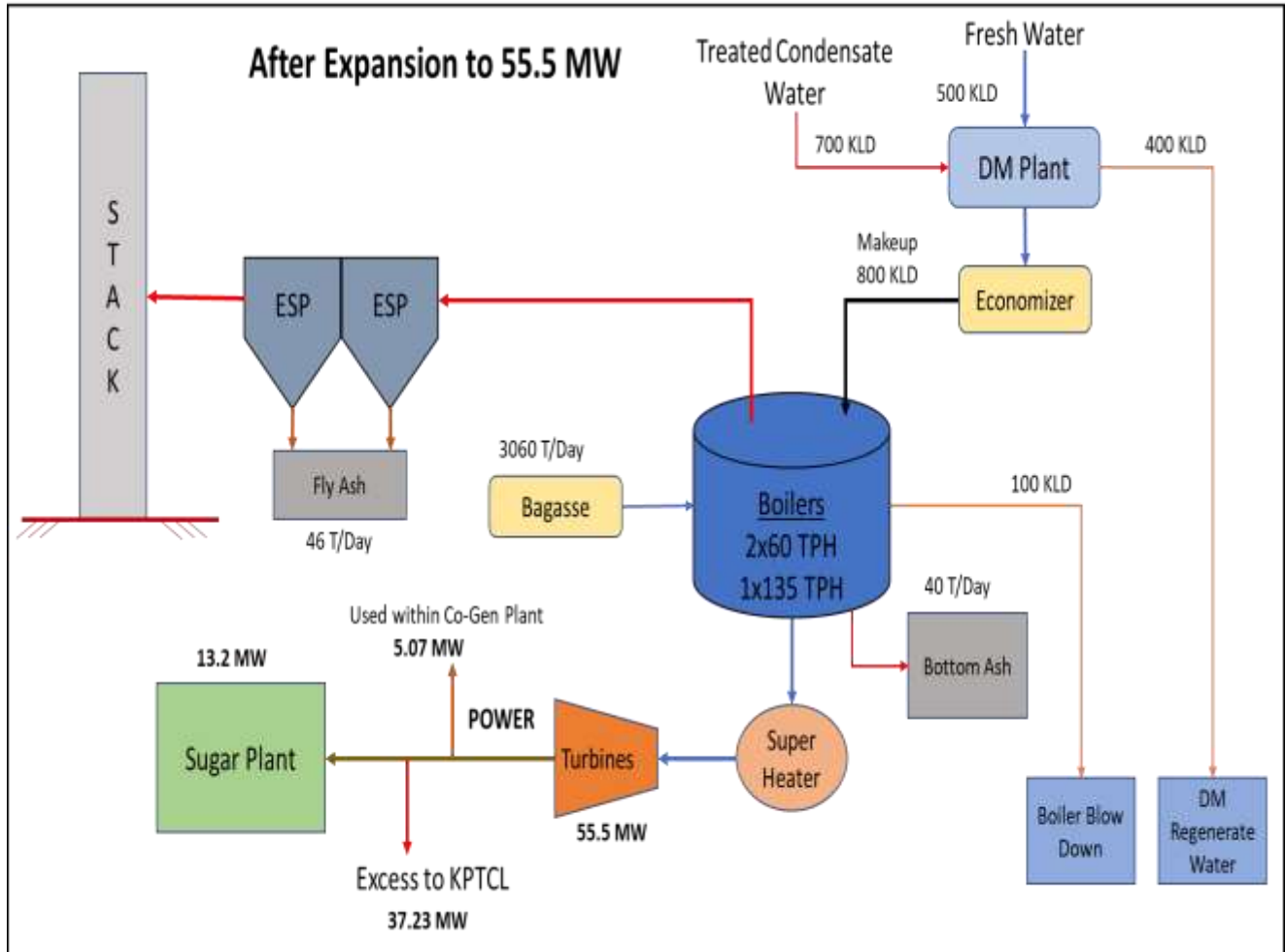


Figure 1.2: Flow Chart for Co-generation

1.4 RESOURCE REQUIREMENT

1.4.1 Capital Investment

The capital cost (Net block as on 31.03.2017) of the plant is Rs. 246.13 crores. The proposed expansion cost is Rs. 166.60 Crores.

1.4.2 Man Power Requirement

The total number of employees at present is 668. After expansion, the plant requires 59 more employees. Therefore, total number of employees after expansion will increase to 727.

1.4.3 Water Source and Requirement

Total fresh water requirement of the industry is 1103 KLD sourced from Krishna River. Industry has the permission to draw 4,800 KLD of water from the River. The permission letter issued by Krishna Bhagya Jala Nigama Alamatti Dam Divison, Government of Karnataka.

1.4.4 Wastewater Treatment & Disposal Facilities

The summary of wastewater generation, Treatment and utilization of wastewater is given in Table 1.2.

Table 1.2: Treatment and utilization of wastewater

SI No	Source	Quantity (KLD)	Treatment and Utilization method
1	Excess Condensate water	1965	<ul style="list-style-type: none"> Condensate is treated in CPU and is used in process and in co-gen cooling tower makeup. Excess treated condensate is used for agriculture.
2	Process cooling tower overflow / bleed	1035	
3	Boiler blow down	100	These effluents are sent to polishing pond where it is mixed with treated effluent from ETP and used for agriculture.
4	RO Reject	400	
5	Co-Gen Cooling tower bleed	120	Recycled back to process
6	Process effluent	1125	The effluent will be treated in the existing ETP. The ETP comprises of oil and grease trap, grit chamber, Primary clarifier, anaerobic digester and one stage extended aeration system. To this system one more set of primary clarifiers, anaerobic digester will be added to take up the additional hydraulic load. Treated water will be collected in polishing pond and used for agriculture.
7	Laboratory	3	
8	Domestic effluent	90	Treated along with the sugar plant effluent.

1.4.5 Air pollution control measures

Sources of air pollution and mitigation measures are given in Table 1.3.

Table 1.3: Air pollution sources and Mitigation Measures

Stack no	Source of Air pollution		Type of fuel	Fuel Consumption		Chimney Height (m) -APC system provided/proposed
	Existing	Proposed		LPH-liquid Fuel	TPH-Solid Fuel	
Boilers Stack Details						
1	50 TPH Boiler	Upgraded to 60 TPH	Bagasse	NA	Bagasse - 25 (On dry weight basis) *	Chimney of 54 m AGL with ESP
2	120 TPH Boiler	Upgraded to 135 TPH	Bagasse	NA	Bagasse - 60 (On dry weight basis) *	Common Chimney of 74 m AGL with separate ESP
	50 TPH Boiler	Upgraded to 60 TPH	Bagasse	NA	Bagasse - 25 (On dry weight basis) *	
DG Set Details						
1	500 kVA	No change	HSD	120	NA	Separate chimney of 7 m ARL with Acoustic Enclosures
2	500 kVA		HSD	120	NA	
3	250 kVA		HSD	60	NA	Chimney of 5 m ARL with Acoustic Enclosures
4	125 kVA		HSD	36	NA	Chimney of 5 m ARL with Acoustic Enclosures
5	-	1000 kVA	HSD	240	NA	Chimney of 30 m ARL with Acoustic Enclosures

1.4.6 Solid Waste Generation and Management

The solid wastes or by-products produced in sugar industry such as bagasse, press mud and molasses are made use as valuable resources. Other solid wastes in the industry are boiler ash, lime sludge and ETP sludge. The solid wastes generated from different operations and their disposal methods are given in Table 1.4.

Table 1.4: Solid Wastes Management

Sl No	Solid Waste	Quantity		Disposal
		Existing (in T/Day)	After expansion (in T/Day)	
1	Bagasse	2550	3600	Used as fuel in boilers.
2	Press mud	257	432	Used as a raw material for composting.
3	Boiler ash	12	40	Ash collected from ash silo is mixed press mud and used for making compost
4	ETP sludge	0.76	1.2	Dried Sludge is mixed with compost and used for making compost
5	Lime sludge	9	12	Collected in trailers and used for land filling
6	Fly Ash	18	20	Mixed with compost and used for making compost

1. Domestic solid waste (garbage trash/ garden litters) will be stored in garbage collection pits and disposed to nearby municipality.
2. Any other solid waste generated from the facility is given to the sister concerned M/s Siddapur Distilleries Ltd., for composting. The compost is given to farmers as manure.

1.4.7 Hazardous Waste Generation and its Management

Only used oil from the DG Sets is the hazardous waste generated from the industry. The quantity and disposal details are given in Table 1.5.

Table 1.5: Hazardous Waste Management

Waste category	Hazardous waste generated	Quantity in kL/Annum		Method of handling
		Existing	After Expansion	
5.1	Used Oil	0.6	1.0	Used oil is collected in leak proof barrels, stored in a separate yard and handed over to KSPCB authorized recyclers or used for lubricating plant machineries

1.4.8 Power Requirement

The power requirement of the plant will be met through captive co-generation unit. Power generated in existing co-generation plant is 40 MW and after proposed expansion will be 55.5 MW. DG Sets are backup facility in case of power failure. Excess power generated will be sent to KPTCL. Table 1.6 provides details of power requirement by the industry during season and off-season.

Table 1.6: Power requirement Details

Details	Existing - 8,500 TCD		After Expansion – 12000 TCD	
	During season	Off-Season	During season	Off-Season
Power Requirement	14.918 MW	4.418 MW	18.270 MW	5.070 MW

CHAPTER 2

DESCRIPTION OF ENVIRONMENT

2.1 STUDY AREA

To study the environmental status in the factory area and surrounding, an area of 10 km radius from the project site is considered as study area as per the ToR issued by SEIAA. The study area comprises of mixed land-use viz., industrial, agriculture and rural.

2.2 METEOROLOGY

The region has a tropical climate with monthly minimum and maximum temperatures of 15 °C and 37.9 °C, respectively. Relative humidity is in the range of 39% to 82%. Highest monthly rainfall during the year 2018 was 67 mm in the month of June. Wind speed varies from 2.39 m/s to 4.44 m/s. The wind speed will be high during the monsoon and relatively low during the winter.

2.3 ENVIRONMENTAL STATUS STUDY PERIOD– BASELINE MONITORING

The environmental baseline status in the study area covering 10 km radial distance from the project site was carried out for three months viz. November 2019, December 2019 and January 2020. The baseline data includes meteorological data, ambient air quality, noise levels, water quality and soil quality. Survey has also been conducted for studying the flora and fauna, socio-economic conditions, land use, etc.

Details of sampling locations where environmental attributes were studied and analyzed are in Table 2.1.

Table 2.1: Baseline monitoring locations

Sl No	Code No	Name of the station	Geo-Cordinates	Distance from the site(km)	Direction from site
1	A1, N1, GW1	Project site	16°26'18.56"N 75°16'27.58"E	-	-
2	A2, N2, GW2	Siddapur Village	16°27'17.24"N 75°17'3.66"E	2.20	North East
3	A3, N1, GW3	Hulyal Village	16°27'31.97"N 75°18'5.96"E	3.80	North East
4	A4, N4, GW4	Marreguddi Village	16°25'7.56"N 75°19'24.95"E	5.83	South East
5	A5, N5, GW5	Shirol Village	16°23'33.79"N 75°15'50.54"E	5.08	South West
6	A6, N6, GW6	Kulali Village	16°23'44.04"N 75°13'21.79"E	7.08	South West

7	A7, N7, GW7	Kalhalli Village	16°27'51.74"N 75°14'11.25"E	4.82	North West
8	A8, N8, GW8	Hunashikatti Village	16°28'11.27"N 75°20'2.38"E	7.30	North East

2.3.1 Air environment

Ambient air quality of the study area was monitored for criteria pollutants PM₁₀, PM_{2.5}, SO₂, NO_x & CO. All the air quality parameters analyzed at all the locations were found to be within the permissible limits specified by MoEF in the National Ambient Air Quality Standards, Notification dated 16th November 2009 for industrial, residential & rural areas. The observed results are in Table 2.2.

Table 2.2: Ambient Air Quality Monitoring Results

Sl. no.	Parameter	Unit	Measured values Range	Limits in AAQS (24hrs), max
1	PM ₁₀	µg/m ³	40.12 – 60.98	100
2	PM _{2.5}	µg/m ³	20.92 – 37.06	60
3	SO ₂	µg/m ³	4.01 – 5.99	80
4	NO _x	µg/m ³	9.04 – 10.85	80
5	CO	mg/m ³	BDL	4

2.3.2 Noise environment

Background noise levels were measured in 8 locations within the study area. Sound level meter was used for measuring the noise level. The average noise levels recorded are in Table 2.3.

Table 2.3: Average Noise Levels Recorded

Location	Noise level, dB(A) _{Leq}	Standards
Project site	Day – 70.2; Night – 58.1	Day – 75; Night - 70
Other locations (Highest value)	Day – 67.9; Night – 53.1	Day – 55; Night - 45

Based on noise monitoring and analysis data, it is evident that the noise generated in the industry premises are within the limits of the standards. Noise levels in other stations in the study area are slightly higher than standards due to movement of vehicles such as Tractors, Lorries etc. near to the monitoring stations. These have temporary, short term and reversible impacts.

2.3.3 Water environment

2.3.3.1 Surface water

Major fresh water source within the study zone is Krishna River at a distance of about 14.6 km and the water requirement for industry is sourced from this river. Water sample was collected and the results for the parameters analyzed for surface water sample was compared with “Designated Best Use Practices” published by CPCB. The water quality conforms to class “C” standards.

2.3.3.2 Ground water

One bore well is located in the premises of the Industry, the depth of this bore well is 150 m. The quality of groundwater samples at eight different locations within 10 km radius from the project site was analyzed. It is observed that all the parameters of the groundwater samples analyzed are within the maximum permissible limits as per IS: 10500-2012.

2.3.4 Soil quality

Soil samples were collected from eight different locations in the study area and analyzed. It has been observed that the pH of the soil quality ranges from 6.42 to 8.06 indicating that the soil is slightly acidic to moderately alkaline in nature. Most of the essential nutrients are Nitrogen (N), Phosphorus (P) are available for plants at sufficient concentration except Potassium (K) which is available at a lesser concentration. Soil is suitable for agriculture.

2.3.5 Hydrology and Hydrogeology

Location of M/s Shri Prabhulingeshwar Sugars and Chemicals Limited is in a higher elevation than the surrounding. The elevation in the study area ranges from 580 m to 625 meter above mean sea level (MSL). The area is part of Krishna River basin and is drained by Ghataprabha and Krishna River. All streams in the area exhibit a dendritic drainage pattern. The area is having undulating topography.

The area around the industry is underlain by Sandstone/ quartzite formation. The rest of the area underline by basaltic lava flows of the Deccan trap. Ground water in and around M/s Prabhulingeshwar Sugars and Chemicals Limited, occurs under water table condition in weathered and jointed Sedimentary and basaltic formation. Deep seated aquifers are tapped by bore wells in this area. Generally, the depth of these bore wells ranges from 150 m to more than 250 m BGL.

2.3.6 Ecology and Biodiversity

Study area is predominantly agriculture and the open land with grass and shrubs. The vegetation and fauna in the study area is not affected by the operation of this industry.

The impact on the environment is considered insignificant as the scale of operation is small and all the pollution mitigation measures have been taken by the industry. It is also open to improve the environmental conditions by proactive participation with the local people around the industry.

It is observed during the study that there is one tree species, *Santalum album*, which is falling under the Vulnerable (VU) category according to the IUCN conservation criteria. This species needs to be preserved in and around the industry. The species found during the visit are presented in the Chapter 3 of EIA Study report.

2.3.7 Socio-economics

The SPSCL has a positive response from the public. The willingness to pay and the willingness to accept the project has positive outcome. The ratio between this is around 2:1. It means the benefits are two times greater than the loss. The social and cultural vulnerability index responds a very less level of resilience is at the higher side. The livelihood of the public within the study area of 10 km will not be disturbed due to the proposed expansion.

Agriculture and related activities are the main source of income for their lively hood. Proposed project will help to increase the socio-economic status of the local people. Project will create direct employment opportunities to 727 people and indirect employment opportunities to around 2000 to 3000 people in the area. Indirect employment can be developed in the farm and off farm activities. Revenue expenditure in the area will create purchasing power of the consumers, which intend to invest in consumer goods sector. Small micro enterprises will be grown in the factory area.

CHAPTER 3

ANTICIPATED ENVIRONMENTAL IMPACTS & MITIGATION MEASURES

Sources of impact due to the industrial expansion and mitigation measures are given below.

3.1 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES DURING CONSTRUCTION PHASE

The main construction activity will be up gradation of ETP by providing a clarifier and an anaerobic digester. All plant and machineries in the expansion will be retrofitting the equipment for higher capacity there will not be construction of additional factor building.

3.1.1 Air Environment

Table 3.1: Impacts on Air environment & their Mitigation measures during Construction Phase

Source	Impact	Mitigation measure
<ul style="list-style-type: none"> ➤ Site preparation and development ➤ Vehicular movement ➤ Civil construction work ➤ Disposal of solid wastes/construction debris ➤ Erection of plant 	<ul style="list-style-type: none"> ➤ Effect on ambient air viz., Dust and particulate matter ➤ Odour ➤ Temporary and restricted within plant boundary 	<ul style="list-style-type: none"> ➤ The approach roads are already paved and vehicles will be kept in good order to minimize the pollution due to vehicular traffic ➤ Existing green belt will be strengthened for attenuation of fugitive emission ➤ Water sprinkling ➤ Barricading the construction area ➤ Transportation vehicles and machineries are properly and timely maintained and serviced regularly. ➤ The loose sand or any debris transported shall be covered with tarpaulin or any suitable material

3.1.2 Water Environment

Table 3.2: Impacts on Water environment & their Mitigation measures during Construction

Phase		
Source	Impact	Mitigation measure
<ul style="list-style-type: none"> ➤ Surface run off during the rainy season ➤ Civil construction work ➤ Domestic use 	<ul style="list-style-type: none"> ➤ Soil erosion due to surface run off ➤ Siltation of drainage courses ➤ Temporary and reversible 	<ul style="list-style-type: none"> ➤ Strengthening of green belt in and around plant will be undertaken during the monsoon season. Fast growing and soil binding plants will be chosen for planting ➤ Storage of construction material and debris in a secured manner, to avoid runoff with rainwater ➤ Use of treated industrial water for construction including curing ➤ Sewage will be disposed in the prevailing treatment system

3.1.3 Land Environment

Table 3.3: Impacts on Land environment & their Mitigation measures during Construction

Phase		
Source	Impact	Mitigation measure
<ul style="list-style-type: none"> ➤ Site preparation and development ➤ Civil construction work ➤ Disposal of solid wastes/construction debris ➤ Erection of plant ➤ Vehicular movement 	<ul style="list-style-type: none"> ➤ Topographical changes ➤ Minor impact restricted to plant premises 	<ul style="list-style-type: none"> ➤ Minimum exposure of the construction site and avoiding destruction of vegetation ➤ All earth work will be carried out in such a way that the soil erosion and carryover of the materials in other areas are prevented by providing barricades and stacking the excavated earth in a secured manner till it is made use for refilling in foundation, plinth etc. ➤ Excess excavated soil will be used for green-belt development and for internal roads of the factory for leveling ➤ The domestic solid wastes are segregated at source.

3.1.4 Noise Environment

Table 3.4: Impacts of Noise & their Mitigation measures during Construction Phase

Source	Impact	Mitigation measure
<ul style="list-style-type: none"> ➤ Civil construction work ➤ Vehicular movement 	<ul style="list-style-type: none"> ➤ Disturbance to Fauna like birds and animals ➤ Temporary, Non-significant and reversible 	<ul style="list-style-type: none"> ➤ Regular maintenance and lubrication of construction equipment ➤ High noise producing construction activities will be restricted to daytime only. ➤ Strengthening of Greenbelt development will be undertaken. ➤ For personnel working in high noise areas will be provided with Personal Protective Equipment.

3.1.5 Biological Environment

Table 3.5: Impacts on Biological environment & their Mitigation measures during Construction Phase

Source	Impact	Mitigation measure
<ul style="list-style-type: none"> ➤ Civil construction work ➤ Vehicular movement 	<ul style="list-style-type: none"> ➤ Disturbance caused to birds and animals in the area ➤ Temporary and reversible 	<ul style="list-style-type: none"> ➤ Greenbelt development. ➤ Protecting the existing trees/vegetation as far as possible. ➤ Controlled disposal of construction debris in low laying areas in consultation with the local body which will also help in reclamation of land. ➤ Shortening the plant and machinery erection period

3.1.6 Socio- Economic Environment

The construction phase provides employment opportunities for the local people. In addition to the opportunity of getting employment in construction work, the local population would also have employment opportunities in related activities like petty commercial establishments, small contracts and supply of construction materials etc. Overall, there is positive impact on Socio- Economic Environment.

3.2 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES DURING OPERATION PHASE

3.2.1 Air Environment

Table 3.6: Impacts on Air environment & their Mitigation measures during Operation Phase

Source	Impact	Mitigation measure
<ul style="list-style-type: none"> ➤ Boilers ➤ DG Sets ➤ Vehicular movement 	<ul style="list-style-type: none"> ➤ Effect on ambient air viz., Dust, PM, SO₂, NO_x & CO₂. ➤ Odour ➤ Fugitive emissions ➤ Worker Health ➤ Continuous and significant 	<ul style="list-style-type: none"> ➤ ESP is proposed as APC equipment for Boilers. ➤ Chimneys with adequate height are provided for both boilers and DG sets. ➤ The ash collection system at the APC equipment is designed to avoid the fugitive dust and emissions ➤ The approach roads are already paved and vehicles will be kept in good order to minimize the pollution due to vehicular traffic ➤ Existing green belt will be strengthened for attenuation of fugitive emission ➤ Water sprinkling will be done to avoid fugitive emission from bagasse ➤ Transportation vehicles and machineries are properly and timely maintained and serviced regularly.

3.2.2 Water Environment

Table 3.7: Impacts on Water environment & their Mitigation measures during Operation Phase

Source	Treatment and disposal method
Excess Condensate water	Treated in CPU and treated condensate is reused in process and RO Plant.
Process cooling tower overflow	Excess treated condensate is sent for agriculture or irrigation purposes. Treated CPU water is also used as co-gen cooling tower makeup
Boiler blowdown	These effluents are sent to polishing pond and after treatment will be for agriculture or irrigation purposes
RO Reject	
Co-Gen Cooling tower	Recycled back to process
Process effluent	These effluents are sent to existing ETP of 1500KLD. Primary clarifier and anaerobic digester will be added to existing ETP to treat effluent after expansion. Treated water will be sent to irrigation land/green belt development
Laboratory	
Domestic effluent	Treated along with the sugar plant effluent.

3.2.3 Land Environment

Table 3.8: Impacts on Land environment & their Mitigation measures during Operation Phase

Source	Impact	Mitigation measure
<ul style="list-style-type: none"> ➤ Plant Effluent ➤ Boiler Ash ➤ Press mud ➤ ETP Sludge ➤ Fly ash from ESP 	<ul style="list-style-type: none"> ➤ Change in Natural vegetation ➤ Change in Soil quality 	<ul style="list-style-type: none"> ➤ The yeast sludge, boiler ash, fly ash, press mud and ETP sludge will be bio composted and sold to farmers. ➤ Hazardous waste i.e. waste oil from DG set shall be Stored in a secure manner and dispose for lubricating machineries in sugar plant. ➤ Effluent will be treated and reused within the plant. Excess will be sent for agricultural use.

3.2.4 Noise Environment

Table 3.9: Impacts of Noise & their Mitigation measures during Operation Phase

Source	Impact	Mitigation measure
<ul style="list-style-type: none"> ➤ Boilers ➤ Process ➤ DG Sets ➤ Vehicular movement 	<ul style="list-style-type: none"> ➤ Disturbance to Fauna ➤ Worker health ➤ Non-significant and reversible 	<ul style="list-style-type: none"> ➤ Regular maintenance and lubrication of all equipment and machineries ➤ Strengthening of Greenbelt development will be undertaken. ➤ The air compressor, process air blower, pneumatic valves will be provided with acoustic enclosures ➤ Noise proof cabins will be provided to operators at TG room. ➤ DG sets are in acoustic enclosure. ➤ Dampers will be provided to machineries to avoid rattling due to vibration ➤ For personnel working in high noise areas will be provided with Personal Protective Equipment and regular health checkups.

3.2.5 Biological Environment

Most of the land area in the vicinity of the plant is mainly agricultural land. The main vegetation's in the adjacent reserved forest are scrubs along with rocky out crops. There are no endangered flora and fauna species in the study area. The project activities are restricted to the

factory site except the transportation of raw material and products. No impact of project on biological environment is expected.

3.2.6 Socio- Economic Environment

The SPSCCL has a positive response from the public. The willingness to pay and the willingness to accept the project has positive outcome. The ratio between this is around 2:1. It means the benefits are two times greater than the loss. The social and cultural vulnerability index respond is very less and level of resilience is higher.

After the proposed expansion, there will be more employment opportunities for the local people. In addition to the opportunity of getting employment in construction work, the local population would also have employment opportunities in related activities like petty commercial establishments, small contracts and supply of construction materials etc. Overall, there is positive impact on Socio- Economic Environment.

CHAPTER 4**ENVIRONMENTAL MONITORING PROGRAMME**

Monitoring program includes the monitoring of the Environmental Aspects viz., Ambient Air Quality, emission from the air pollution sources, effluent quantity and quality monitoring including the treated effluent monitoring, soil quality analysis and noise level monitoring. The Monitoring programme also includes the parameters to be monitored for the various environmental components mentioned above, sampling location and the frequency of monitoring.

4.1 ENVIRONMENTAL MONITORING METHODOLOGY AND SCHEDULE

Ambient air, stacks, ambient noise, water and wastewater are monitored on regular basis. Monitoring of all environmental attributes shall be done as per the clearances and consents issued by the regulatory agencies viz., MoEF/CPCB/SPCB. The proposed budgetary provision for environmental monitoring is Rs. 4,44,700 per annum and details of the same are in Table 4.1.

Table 4.1: Environmental Attributes Frequency, Test Procedure and the Budget

Sl No	Particulars	Methods of Monitoring	Frequency of monitoring	Cost of monitoring	Amount in Rs./Annum
Air environment					
1	Ambient Air quality at Project premises	PM _{2.5} : IS 5182:part-23: 2006 PM ₁₀ : IS 5182:part-23: 2006 SO ₂ : IS 5182:part-2: 2001 NO _x : IS 5182:part-6: 2006 VOC meter	Once in a month continuous for 48 hours at each station	Rs. 7000 per station per day. Two stations	3,36,000
2	Stack monitoring a. Boiler stack	PM: IS 11255:part-1: 1985 SO ₂ : IS 11255:part-2: 1985 NO _x : IS 11255:part-7: 2005 HCl: Titrimetric	Every month during season. Continuous for 48 hours at each stack	Rs. 3000 Per stack. 3 stacks	81,000
Noise environment					
1	At the boundary of the factory.	Sound level meter	Once six months - Day & Night	Rs. 300 Per station. Three locations	1,800
2	DG sets	Sound level meter	Once in a year	Rs. 300	300
Water environment					
1	Ground Water and surface water	Standard analytical procedure for water by APHA and AWWA	Pre and post monsoon.	Rs. 1200 per sample.	9,600
2	Raw and treated effluent				

Soil environment					
1	Within project premises at one location around hazardous waste storage site	Standard analytical procedure.	Once a Year. Post monsoon once.	Rs. 2000 per sample 8 samples	16,000
Total budget for monitoring					4,44,700

4.2 HEALTH OF EMPLOYEES

Annual health check-up is conducted for all employees. Every worker is made to undergo proper training and proper PPEs are provided. Currently, there is no health impact on the workers working in the plant.

CHAPTER 5

ADDITIONAL STUDIES

5.1 PUBLIC HEARING AND CONSULTATION

Shri Prabhulingeshwar Sugars and Chemicals Ltd., with the help of KSPCB will conduct public consultation and the detailed report of the same will be included in the final EIA report duly incorporating the issues which emerge during the public hearing.

5.2 RISK ASSESSMENT AND HAZARD ANALYSIS

The main objective of risk assessment study is to propose a comprehensive but simple approach to carry out risk analysis and conducting feasibility studies for industries, planning and management of industrial prototype hazard analysis study in Indian context.

Detailed risk assessment study is carried out to evaluate the risks involved in the plant, process and machineries and to identify suitable precautionary measures to be taken for prevention/mitigation of such risks. Details of risk assessment carried out are covered in Chapter 7 of EIA report.

The conclusions drawn from the above study relates to the fact that, industry has certain low level or marginal impacts on the local environmental setting, which has not affected the natural environmental setting of the study area either marginally or otherwise.

Employees are trained in safety aspects and necessary personal protective equipments will be used for worker safety.

5.3 SOCIAL IMPACT ASSESSMENT

Social Impact Assessment is a link to Socio - Economic Benefit to the people living around the project. The present proposal is expansion of sugar & co-generation unit. Therefore, the proposed project will continue to benefit the agriculturists in terms of marketing their produce (that is sugarcane) to the factory.

Project will create direct employment opportunities to 727 people and indirect employment opportunities to around 2000 to 3000 people in the area.

The existing land is sufficient even for the proposed expansion and therefore no additional land is proposed.

CHAPTER 6

PROJECT BENEFITS

Any project coming up in an area will bring in improvements in physical infrastructure, social infrastructure, employments for the skilled and unskilled people besides other tangible benefits.

6.1 IMPROVEMENTS IN THE PHYSICAL & SOCIAL INFRASTRUCTURE

Due to the presence of M/s. Shri Prabhulingeshwara Sugars Ltd., there are improvements in the region that has taken place over the years since the commissioning of the plant. To name a few infrastructural developments are road connectivity between the villages and to the industry, increase in green cover, drinking water facilities along with sanitation etc.

The SPSCCL is committed to serve its stakeholders sincerely. Social infrastructure facilities such as schools, hospitals, community halls, markets, colleges, and religious important places are located within 10 km radius from the site. The infrastructural facilities such as roads, electricity, water sources etc., already exist. Due to expansion, there will be no additional demand on the physical and/or social infrastructures.

6.2 TANGIBLE BENEFITS

Total number of existing employees is 668 and after expansion 59 more will be hired. Basic amenities/facilities such as road, power supply, communication, water supply, medical and health checkup facilities, schools and colleges are available within the vicinity of the industry.

The biggest and the noteworthy measure undertaken by the industry was the setting up of a school. Shri Puspatai Kannada Medium High School, which has over 800 students and 29 teachers. These facilities will also be further strengthened by SPSCCL depending on the need and demand.

6.3 INTANGIBLE BENEFITS

Since the commissioning of the plant, the economic condition of the people in the neighbouring villages has improved and will continue to improve after the proposed expansion. Social development works will be undertaken in the neighbouring villages under CSR program.

6.4 CORPORATE ENVIRONMENT RESPONSIBILITY (CER)

Proposed CER activities are given in the Table below indicating the budgetary provision and their period of execution. The issues raised during public consultation will be addressed by the project proponent and any additional CER activities as may be required will be proposed along with funds earmarked for such activities and the same will be included in the final EIA Report under Environment Management Plan.

Table 6.1: Budgetary provision for the proposed CER activities

SI No	Activity	Fund allocated in Rupees Lakh	Period of execution in years from the commencement of project
1	Contribution to PMCARE fund	25	2020-2021
2	Contribution to Karnataka CMCARE fund	25	2020-21
3	Avenue plantation in community areas	02	2020-2022
4	Education and skill development programs	06	2020-2022
5	Infrastructure development programs in nearby schools	20	2020-2020
6	Public welfare (Swachh Bharat Abhiyan)	06	2020-2022
7	Participation and support to KSPCB for conducting Parisaramitra /green nurturing programme in schools.	04	2020-2022
8	Providing drinking water facility to nearby villages	07	2020-2021
Total		95	

CHAPTER 7

ENVIRONMENT MANAGEMENT PLAN

The Environment Management Plan (EMP) is required to ensure sustainable development in the area of the proposed project. EMP aims at not only the regulatory requirements to meet the norms prescribed in the Environment Protection Act and Rules but also to ensure the conservation measures with respect to use of natural resources.

7.1 ENVIRONMENTAL MANAGEMENT CELL

For effective implementation of the system an Environmental Management Cell (EMC) is established for implementation and monitoring of EMP. It consists of Head of the Unit, Technical Head, Production Head, EMC Head under which Chemists, ETP Operators & Environmental Engineers report to him with clearly defined responsibilities and authorities for effective implementation of EMP.

7.2 GREENBELT MANAGEMENT PLAN

The area covered by green belt is 30 acres accounting for 33 % of the total land area. The existing green belt to be enriched with native species. These plants also support the faunal diversity in the premises as food source to them. Keeping in view of the soil and water quality available in and around the industry and the topography of land, tree species are selected and planted for development of greenbelt.

7.3 RAINWATER HARVESTING SYSTEM

In the project it is intended to harvest and recharge the storm water. The harvested rainwater will be used for greenery development /gardening/dust suppression/ washing / cleaning purposes. Along with this, to increase the groundwater potential of the region, recharge structures will also be implemented. Rainwater harvesting plan is implemented to conserve the water resources and to improve underground potential of the region.

The rainwater harvesting potential of the plant is 2000 m³/day. The rainwater is collected in an existing pond of total holding capacity of 2500 m³. It is proposed for an additional pond of capacity 2500 m³. The industry has provided recharging pits along the storm water drains.

7.4 BUDGETARY PROVISION FOR ENVIRONMENTAL MANAGEMENT PLAN

Budget for EMP (CAPEX & OPEX) are given in Table 7.1.

Table 7.1: Budgetary provision for EMP

Sl. No.	Application	Budget towards EMP, Rupees in Lakhs	
		Existing (2015 to 2019)	After expansion (Proposed)
A	Capital Investment		
1	Air pollution control facilities (ESP, Chimney, ESP and ash handling, online monitoring system)	109.49	-
2	Wastewater treatment facilities with online monitoring system viz., effluent flow meter and IP camera	179.78	270.14
3	Green belt (@Rs. 100 per sapling)	13.18	5
4	Laboratory and monitoring facilities	1	-
5	Online monitors	14	-
	Sub total	317.45	275.14
B	Recurring Cost of Operation and Maintenance		
1	Environmental attributes Monitoring cost	697.86	4.45
2	Online monitoring cost		4.10
3	Environmental training and safety	1.88	0.75
4	Greenbelt Maintenance & Landscaping	0.5	0.1
5	Occupational Health and Safety (includes health surveillance and procurement of PPEs)	85	17
	Sub total	785.24	26.4

CHAPTER 8**SUMMARY AND CONCLUSIONS**

M/s. Shri Prabhulingeshwar Sugars and Chemicals Limited proposes for expansion of sugarcane crushing capacity from 8,500 TCD to 12,000 TCD and Co-gen power plant from 40 MW to 55.5 MW.

The conclusions drawn from Baseline monitoring and the predicted impact indicate that the quality of ambient air, surface water, groundwater and soil has not hampered due to the current operation of the industry.

The industry has created an Environmental Management Cell to monitor and implement EMP and to comply with the regulatory requirement to improve its environmental status from time to time. The management of the industry is committed to adopt all such technological advances to reduce the impact due to its operation on the environment.

To put it in a nut shell the management of M/s. Shri Prabhulingeshwar Sugars & Chemicals Limited, strongly believes in the concept of sustainable development and understands the impacts of the proposed industry on the environment from the Environmental Impact Assessment studies conducted. It is committed to develop its industry without giving room for any adverse impacts on the environment and lays emphasis on the implementation of the recommendations of the Environmental Management Plan in true spirits.