



EXECUTIVE SUMMARY

ES.1 Introduction

M/s Shri Sai Priya Sugars Ltd., headed by Shri. Murugesh R Nirani, are planning to expand Sugar Complex having Sugar cane crushing unit from 5000 TCD to 10000 TCD, Co-generation unit from 30MW to 65 MW along with the installation of 5 MW incineration boiler at Hippargi, Alabal and Maigur villages in Jamakhandi Taluk, Bagalkot district of Karnataka.

According to EIA Notification dated 14th September 2006, the project falls under Category “B”, Project or Activity 5(j) and 1 (d). Therefore, it’s necessary for M/s Shri Sai Priya Sugars Ltd to obtain Environmental Clearance from State Environmental Impact Assessment Authority, Karnataka.

ES.2 Project Description

The project has obtained Environmental Clearance for 5000 TCD sugar cane crushing, 30 MW cogeneration unit and 120 KLPD distillery unit vide letter no: J-11011/277/2010-IA II(I) dated 14-02-2015 from Ministry of Environment, Forest and Climate Change (MoEF), New Delhi, the industry is still in the establishment stage. Salient features of the project are detailed below:

Table ES.1 Salient features of the proposed project

Sl.No	Items	Particulars
1	Objective of the Project	Expansion of sugar cane crushing capacity from 5000 TCD to 10000 TCD, Cogeneration unit from 30MW to 65 MW and installation of 5 MW incineration boiler.
2	Total capacity of the plant after expansion	10000 TCD sugar unit, 65 MW cogeneration unit, 5 MW from incineration boiler and 120 KLPD distillery
3	Promoters	Shri Sai Priya Sugars Ltd
4	Total Investment, Rs	704.62 Crores
5	Project location	Sy No 148, 144-151 of Maigur Village, and Sy no 238, 239 of Hippargi and Sy No 26, 27 of Albal village, Jamakhandi Taluk, Bagalkot District, Karnataka State
6	Extent of land	140 Acres 28 Guntas
7	Category of Project	5 (j) Sugar -1 (d) Thermal
8	Man Power	350 Nos
9	Fresh Water demand and Source	For 10000 TCD sugar cane crushing and 65 MW cogeneration: During season: 840 KLD

Sl.No	Items	Particulars
		During off season: 3367 KLD Source: Krishna River
10	Power supply	<u>Construction Phase</u> 500 kwh – for construction phase from KPTCL <u>Operation phase</u> Sugar unit: 9.1 MW and for Cogeneration unit: during season : 5.2 MW and off season: 7.8 MW. Source : Captive Co generation unit
11	Latitude	16°34'14.0" N
12	Longitude	75°12'27.6" E
13	Number of working days	Sugar unit: 160-180 days Cogeneration: 300 days

Table ES.2 Raw Material Statement

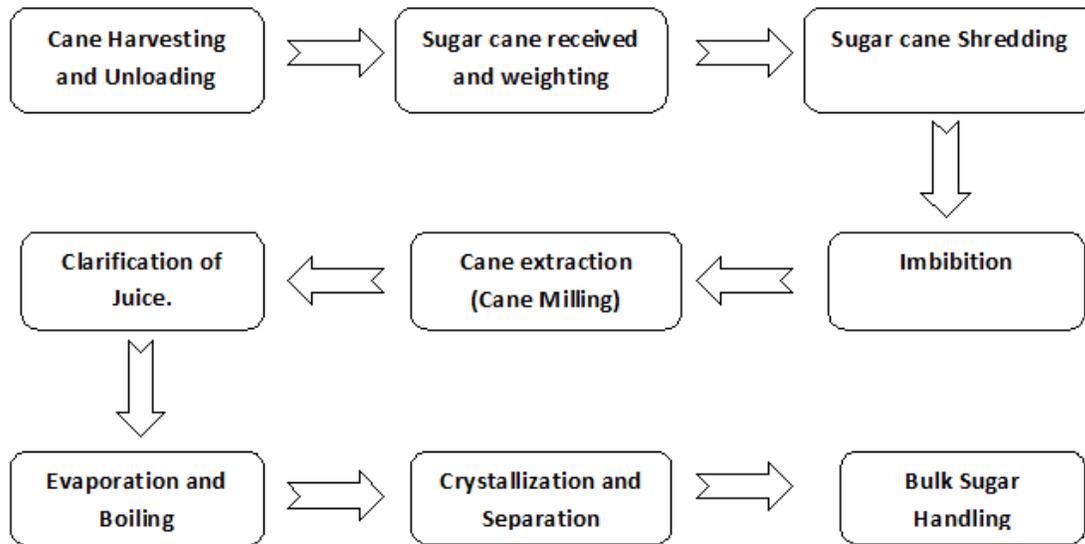
Sl. No	Particulars	Quantity, MT/day	Quantity, MT/month	Source	Storage
01	Sugar cane	10000	300000	From nearby areas	Sugar Cane from field is transported to factory premises through vehicles, the vehicles after reaching the factory premises will be parked in queue at Cane yard, after weighing, it is directly taken into milling process.
02	Bagasse as fuel at 85% of heat input	2550	76500	In house	Stored in Bagasse Yard
03	Coal as fuel at 15% of heat input	450	13500	Indonesian/Australian coal from open market	Stored in Coal Yard
04	Sulphur	5	150	Market - Mumbai	Stored in Sulphur godown
05	Lime	16	480	Lokapur, Yadwad, Rajasthan	Stored in Lime godown
06	Caustic Soda flakes	0.15	4.5	Market - Mumbai	Stored in WTP sub store
07	Lubricants (Wheel bearing greases, lubricating oils etc.)	0.5	15	Oil companies	Stored in Main Store
08	HCl	0.66	20	Market - Mumbai	Stored in WTP sub store

Sl. No	Particulars	Quantity, MT/day	Quantity, MT/month	Source	Storage
09	OP acid	0.1	3	Market Mumbai	- Stored in Main Store

Raw material for cogeneration

- Fuel: Bagasse
- Source: Own sugar mill
- Quantity: 2550 T/d

Process flow sheet



Cogeneration process flow sheet

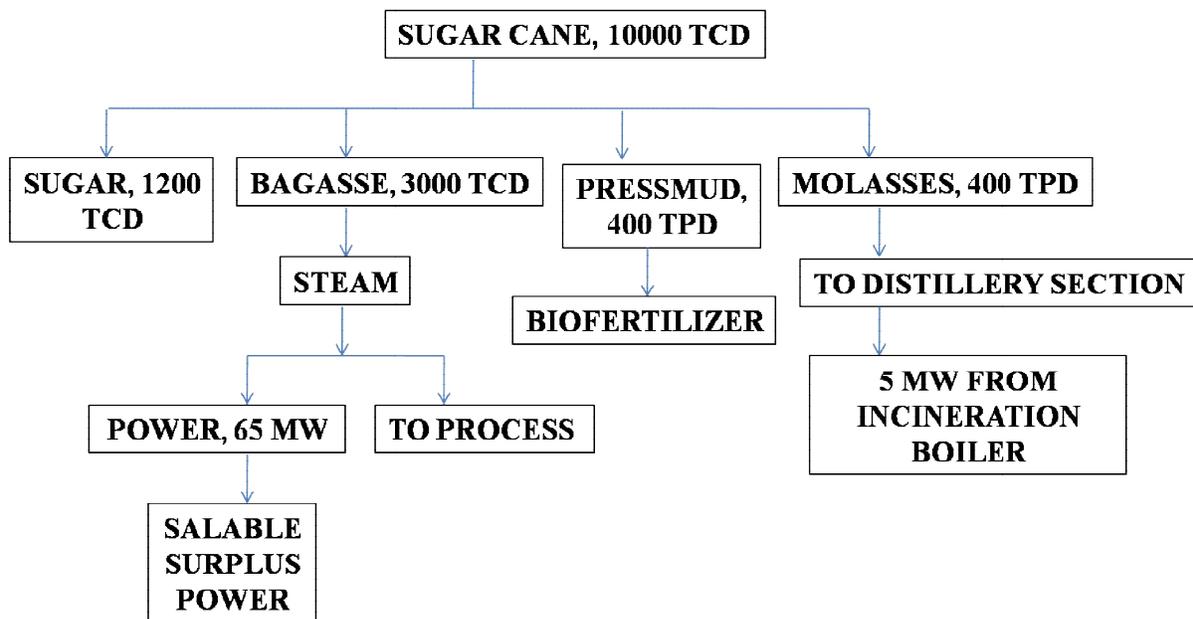
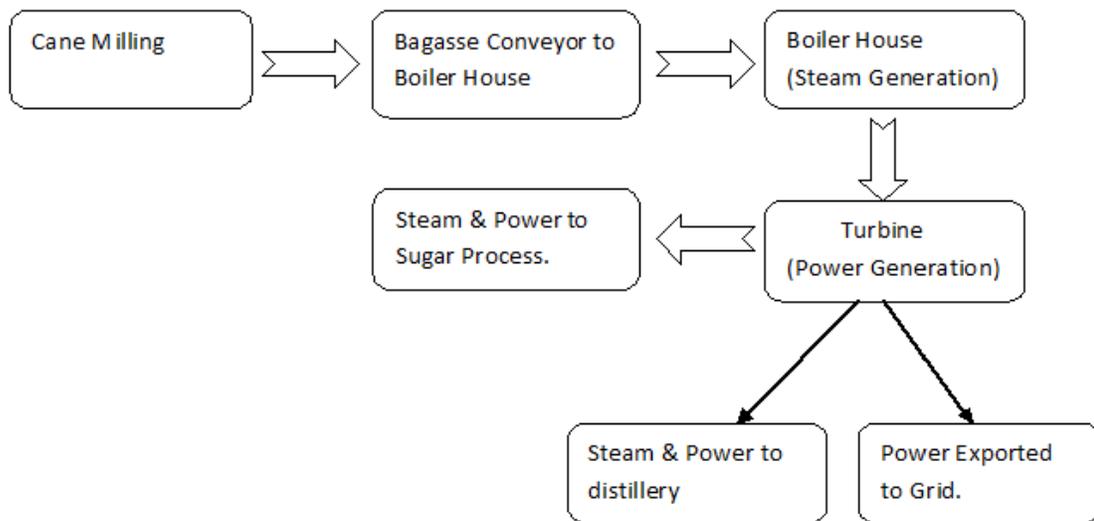


Fig ES.1 Proposed product mix

ES.3 Description of the Environment

In order to assess the baseline environmental status of the project, monitoring of various environmental attributes were conducted by EHSCPL during March 2015 - May 2015. In addition to the baseline environmental monitoring, field inspection in the study area, collection of secondary information for all the environmental components and discussions with the officials and local public were conducted by the study team.

Land Use: The study area of 10 Km radius from the project site comprises of mixed land use – residential, commercial, industrial and agricultural activities. The land use of core zone reveals that majority of the area is crop land (93.31 %) and followed by Scrub-Forest (2.37 %)

Land Environment: Soil samples were collected at Nine locations. The soil of the study area mainly of two types i.e. Black & Red soil. Black soil also referred as “regur” have black colour due to the presence of black coloured minerals titanite magnetite with a high percentage of humus and high basicity. The black soil are rich in chemical properties and rich in iron, lime, calcium Magnesium, carbonates and aluminum but are poor in nitrogen, phosphorous and best suited for the cultivation of cotton. Black soils are very fertile but they do not require heavy irrigation. Due to slight alkaline reaction, deep cracks appear during summer season. Sugar cane, cotton, Maize, Chilies, and pulses are the chief crops of the black soil.

Red soils are formed by the basic granite, Gneisses and schist, which are rich in iron and magnesium and it contains a small amount of humus. The red soil is light in texture. They are deficient in nitrogen, humus, lime and Phosphoric acid. They are relatively poor in fertility large varieties of crops can be raised on a large scale. These soils are ideal for the growth of Ragi, Millets and some other food grains, groundnut, other oil seeds, tobacco, cotton and other commercial crops also raised on such soils.

Meteorology: Meteorological monitoring was carried out at project site during March 2015 to May 2015. Watchdog 2900 ET Sl. no 6180 was installed at site to record Solar Radiation (Watt / sq. m), Relative Humidity (%), Temperature (°C), Rainfall (mm), Wind Direction (Deg), Wind Gust (km/hr), Wind Speed (km/hr) and Dew Point (°C). The maximum mixing height of 2464 mts above ground level is observed while the minimum mixing height observed is 0.6 mts. Temperature during the study period was in the range of 17.7°C - 43.2°C. On an average the temperature of 30°C was observed. Maximum Solar radiation 1148 wat/m² is observed. Maximum of 0.7 mm rainfall observed during March. Scanty rainfall observed.

Air Environment: Ambient air quality monitoring was carried out at seven locations. The results of the AAQM reveals that, measured values for PM₁₀, PM_{2.5}, SO₂, NO₂ and CO were within the NAAQ standards, 2009 and parameters like Benzene, Benzo(a) pyrene, Arsenic, Nickel were not detected. The ambient air quality was satisfactory.

Noise Levels: Ambient Noise Level Monitoring conducted at 7 locations in and around the proposed project site was found within the CPCB standards.

Surface and ground water quality: Three surface water sample and Four Groundwater (Bore well water) samples were collected in the study area and have been analyzed for describing the baseline water environment. Most of the heavy metals in all samples were found below detectable limits. Overall, all the samples collected from the study area were found to be fit for human consumption.

The study area does not have any manmade water tanks except for the natural ponds. Due to the scanty rainfall over the last few years, the tank and streams hold water only during monsoon season.

Geology: The study area is underlain mainly by the unidentified Basaltic flows of different ages. Flows sparsely to moderate porphyritic compound flows at the top are covered over 70% of the

study area. The Basalts belong to Eocene to upper Cretaceous and laterites of Pleistocene. The pre-Cambrian formations include Argillite, Quartzite and conglomerates are noticed in the southern part of the study as a small patch. Laterites and river alluvium (Recent) occur as insignificant, stray patches.

Hydrology: GW occurs under water table condition in phreatic zone and semi-confined to confined conditions in the fractures at depth. In shallow or phreatic aquifer (NHS), the pre-monsoon (May 2011) depth to water level ranges from 0.71 m bgl to 30.68 m bgl and the general range of water level is 5 to 10m bgl. During post-monsoon (Nov 2011) it ranges from 0.50 m bgl to 26.75 m bgl 0.36 m bgl to 11.30 m bgl and the general range of water level is 5 to 10m bgl. Annual water level fluctuation of rise ranges from 0.08 m to 1.84 m and annual water level fluctuation of fall ranges from 0.05 m to 4.70 m. The long term water level trend (2002-2011) reveals that out of the analysed 28 dug wells, 92% of the wells show rise in the range of 0.085 m to 1.344 m and the remaining 8% wells show fall in water level ranging from 0.098m to 0.194. The fall in the long term water level mainly observed in non-command area of the district indicates the effect of high groundwater development where rainfall is the sole source of recharge. Similarly, the rise in water level corresponds to the canal command areas of the area where, recharge to groundwater takes place through applied irrigation and canal seepages in addition to rainfall.

Biological Environment: From the reconnaissance survey it was observed that, in the study area, project site is surrounded by agriculture lands and 95 trees species belongs to 4 family found at project site. In the study area, 35 species of trees belongs to 16 family and 16 species of shrubs & herbs belongs to 10 family were recorded. As per IUCN status, trees found in the study area are common and no rare, threatened and endangered plant species found in the study area except *Santalum album* and *Chloroxylon swetenia* which are Vulnerable.

About 4 species of reptiles and 2 species of mammals were recorded at project site. 22 species of birds were recorded during the study. No rare, threatened, vulnerable and endangered animal species found in the study area. Following tables reveals the details of animals found at project site along with their conservation status and schedule as per WL (P) act – 1972 respectively.

Socio Economic Studies

A total of 4 villages were considered within 10 km radius of the study area for studies. The results of socio-economic survey reveals that, highest education attained by the respondents were Degree (14%). 24% of the respondents were PUC in the study area and whereas meager (15%) of the respondents have done Higher primary. 36% of the respondents opined that the proposed project will bring substantial employment and business opportunities for local people. However, 17% of respondents expressed that the proposed project have impact on biodiversity, 14% respondents expressed that the proposed project have impact on noise levels 15% of respondents expressed the proposed project have impact on ambient air quality.

ES.4 Anticipated Environmental Impacts and Mitigation Measures

Land Environment

During construction phase the land use of the site area will get modified by the implementation of the proposed project. The probable impacts will arise due to site leveling/clearing, excavation, laying foundation and other construction activities. Hence, impact is considered to be permanent in nature with the development of new land use.

Activities such as clearing, leveling, cutting and filling, foundation works through excavation will significantly lead to dislodging of soil particles and interrun erosion due to loosening of top soil. Removal of earth material also results in formation of scars (i.e., pits unused and not suitably rehabilitated). The impacts may also be anticipated due to dumping of solid wastes (from labour camps), remains of excess excavated earth material and from debris. However, these impacts are short term and likely to be insignificant. It may cause some other secondary impacts such as decrease the water infiltration and also reduce the ground water level in the region. Hence suggested green belt development and rain water harvesting plan for the proposed project site will improve the situation.

During operation phase the installation of the 5 boilers of 2 X 50 TPH, 1 X 150 TPH, 1 X 100 TPH and 1 X 32 TPH incineration boiler with its stacks of 70 m, 85 mts, 85 mts and 80 mts height and other sizeable structures would substantially alter the place and rural landscape. However, the construction of green belts, parks, will largely offset the change to the existing landscape and will provide visual comfort. The spent oil generating from the D.G. sets and steam turbines are categorized as Hazardous waste may lead to soil pollution, which need to be disposed off to the authorized recyclers/reclamation units as per the Pollution Control Board guidelines

M/s Shri Sai Priya Sugars Ltd will implement zero wastewater discharge methodology. Hence, there would be no impact due to any treated wastewater disposal on land as the same will comply with KSPCB discharge standards for onland for irrigation/gardening/Greenbelt Development.

The soils within the impact zone might undergo changes due to deposition of pollutants from the discharge of treated effluent which will be utilized for onland for irrigation/gardening, where in the fertility of the land is anticipated for improvement.

Air Environment

During construction phase: The impact of construction activities on air quality is a cause for concern mainly in the dry months due to settling of dust particles. The main sources of emission during the construction period are the movement of equipments at site and dust emitted during leveling, grading, earthworks, foundation works and other construction related activities. The impact of such activities would be temporary and restricted to the construction phase. The impact will be confined within the project boundary and is expected to be negligible outside the project boundaries.

During the operation Phase: The main sources of Air Pollution in the proposed project are the operation of Boilers. Even though DG sets will be used at site, for the prediction of air pollution from the project, it is not included as the same will be only used during power failure during initial stages and rest of the time, captive power will be utilized from cogeneration unit. Stacks/chimneys will be provided to Boiler and D.G.Sets as per KSPCB Norms. ESPs will be provided to the boilers of 150 TPH and 100 TPH with stack height of 85 mts. Wet scrubber will be provided to the boilers 2 X 50 TPH with stack height of 70 mts. Bag filters will be provided to the incineration boiler of 32 TPH boiler with stack height of 80 mts. From the Air quality modeling studies it is found that, impact on air quality will be minimum during this stage. Greenbelt development of 33% of total land will create aesthetic environment and also acts as a pollution sink for pollutant emissions.

Noise Environment

During construction phase, various sources of noise pollution will be from the operation of machineries like compactors, concrete plant, cranes etc. Other sources of noise pollution during construction period includes movement of vehicles for unloading of construction materials, fabrication, handling of equipment and materials, operation of batching plants. Overall, the impact of noise generated on the environment is likely to be insignificant, reversible and localized in nature and mainly confined to the day time. Construction equipment generating minimum noise and vibration will be chosen.

Noise generating machinery operations at Sugar unit are Crushing, Sugar separation, Steam Production, mixers, pumps, boilers etc. Provision of insulating caps and ads at the exit of noise source on the machinery are proposed. The use of damping materials such as thin rubber / lead sheet for wrapping the work places line compressors, generators sets. Shock absorbing techniques will be adopted to reduce impact; Ear plugs will be provided to the workers exposed to high noise prone activity and it will be enforced to be used by the workers; Greenbelt/Landscape development along the periphery of the proposed site will act as a noise attenuator. Monthly ambient noise level monitoring will be conducted during construction phase and operation phase to conform to the KSPCB stipulated standards both during day (Leq 75 dB(A)) and night time (Leq 70 dB(A)). Construction activities will be restricted only during day time. D.G.Sets with acoustic enclosures will be used.

Water Environment

During construction stage, water will be drawn from the nearby villages from existing tube-wells through tankers.

During operation phase, fresh water requirement of the plant is proposed to be met by Krishna River.

In order to reduce the impact on ground water quality during the construction stage, the sewage generate from the labour activities will be disposed through Septic Tank & Soak Pit. During the operation phase, effluent will be treated in proposed 1000 KLD ETP. The treated effluent will be reused for onland for irrigation/gardening/greenbelt development. The sewage generated from the domestic activities as estimated 13 KLD is proposed for treatment in proposed ETP. The proposed Sugar complex would achieve “zero discharge”.

All along the internal road network, storm water drains (0.8 m X 0.6 m) will be provided to collect water during rains. The storm water collection system will be designed in such a manner so that storm water from garden, parking area, roadways and lawns is used for recharging of ground water through Recharge shafts (10 No.s). Rainwater harvesting sump of capacity 350 KLD (10 m X 10 m X 3.5 m) proposed.

Geology and Hydrology

Jamkhandi taluk as a whole experience 68% as Over Exploited area. This indicates ground water extraction is more than the ground water recharge. Generally this happens in the tail end of the command area. Crop wilting and reduction in crop yield, power cut, shortage / fluctuation in lifting available groundwater, crop failure are some of the environmental concerns w.r.t depleting water level. The area warrants implementation of recharge to ground water body through rainwater harvesting. Also ensure change of cropping pattern to adopt low crop water requirement crops. Implement drip and sprinkler irrigation. Conjunctive use of surface and ground water ensures rise in ground water level and improves water quality. However, since the study area is covered with Krishna River and Ghataprabha Left bank canal, water shortage problem doesn't arise.

Biological Environment

During construction phase: The impact of construction activities would be primarily confined to the project site. As there is no direct impact on biological environment (flora and fauna) due to the project. However, changes occurring on air, water and land environment will have indirect impact. The existing trees will be retained and no cutting of trees envisaged at the project site. Hence, no impacts anticipated on flora and fauna of the project. However, as part of the greenbelt development, native species are proposed at site which helps in improvement of the biota of the region

During Operation phase: No major impacts will be anticipated during operation phase of the project on biological environment. However, with the development of green belt inside the project site, increase the movement of birds, butterflies, etc positively. Maintenance of greenbelt will be undertaken with proper watering during summer

Socio Economic Environment

During construction the peak workforce strength would rise-up to hundred persons. Though the technical persons and skilled labors would by and large, be hired from outside the study area, bulk of the labor force would comprise of unskilled and semi-skilled workers. A substantial number of whom would presumably be recruited from the surrounding areas itself.

Construction of any major industrial project invariably results in socio-economic changes. The influx of material and money lead to change the economic status of the community. Markets, workshops and commercial centers would develop in the area.

Moreover, a sizeable number of service class people who are directly connected with the operation of the plant, e.g. house servants, workshops, washer man, shopkeepers etc. will flow in from the neighboring areas. As the plant and its ancillary facilities act as an active nucleus of activity, a shift of population towards this center will also occur within the study area.

During operation phase, there will be a large flow of financial and material resources, there remains a large possibility of growth of population in the business, trade, commerce and service sector. Thus, a simple backward community may be transformed into a semi-urban complex within a short time frame. At the same time, however, farmers may be induced to adopt more intensive agricultural and animal husbandry practices, resulting in higher production and boosting up of the area economy.

Solid Waste

During construction phase, solid wastes such as excavated soil, debris, some metal waste and domestic waste will be generated. The solid waste generated from labour sheds of about 75 Kgs/day will be segregated and organic portion of it is composted and inorganic waste will be handed over to Maigur Gram Panchayat. Excavated soil/earth will be reused within the site. Debris will be reused in internal drain/road works. Metal waste/scrap waste will be disposed off to recyclers in the Jamakhandi town.

During Operation phase, the solid waste generated such as Bagasse, will be used as fuel in cogeneration unit, boiler-ash, press mud & ETP sludge will be mixed in required proportions and re-used as manure, Lime grit will be re-used in low lying areas and domestic organic solid waste will be composted, while the inorganic solid waste will be handed over to Maigur Gram panchayath

ES.5 Environmental Monitoring Program

Table ES.3 Environmental Monitoring Programme during Construction Phase

Sl.No	Particulars of the Monitoring	No. of Locations	Monitoring frequency	Parameters for Monitoring
1	Ambient Air Quality Monitoring - 24 Hrs	4	Monthly	PM ₁₀ , PM _{2.5} , SO ₂ , NO ₂
2	Ambient Noise Level Monitoring	4	Monthly	Leq Day dB(A) and Leq Night dB(A)
3	Ground Water Quality	1	Monthly	pH, Colour, Odour, Turbidity, Total Dissolved Solids, Total Hardness, Ca, Mg, SO ₄ , F, NO ₃ , DO, Cl, Fe, Coliform Count.
4	Soil quality	1	Monthly	Color, pH,

Sl.No	Particulars of the Monitoring	No. of Locations	Monitoring frequency	Parameters for Monitoring
				Conductivity, Moisture Content, Calcium, magnesium, Nitrogen Phosphorous, Potassium, Organic Matter, Sulphate, Chloride.

Table ES.4 Monitoring Schedule for Environmental Parameters during operation phase

Sl. No.	Particulars	Monitoring frequency	Duration of monitoring	Important parameters for monitoring
I Air Quality				
1	Ambient Air Quality Monitoring within premises	Once in a month	24 hrly sample	PM ₁₀ , PM _{2.5} , SO ₂ , NO ₂
2	Stack/Chimney Monitoring for Boilers, D.G sets	Once in a month	Grab	SO ₂ , PM, NMHC & CO
3	Fugitive emissions monitoring near Bagasse yard.	Once in a month	24 hrly sample	PM ₁₀ and PM _{2.5}
II Water Quality				
1	Ground water analysis within the premises and in nearby villages	Once in a month	Grab	As per drinking water quality standards (IS10500:2012)
2	Effluent - ETP inlet	Once in a month	Grab	BOD, COD, pH, TSS,
3	Effluent- ETP outlet	Once in a month	Grab	pH, BOD, COD, TSS, Oil & Grease
III Soil Quality				
1	Soil quality analysis	Pre monsoon and post monsoon	Grab	pH, C, Organic matter, Na, K, P.
IV Noise Quality				
	Ambient Noise level monitoring near Main Gate/Boundary Mill house section, Co-generation Plant, D.G Set Room, Crushing Areas, Godowns, Parking bay, Loading and Unloading areas.	Once in a Month	24Hrs Monitoring	Noise levels in dB(A) both during day & night time.
V	Greenbelt development	Seasonal	Visual Observation	Survival Rate

M/s Shri Sai Priya Sugars Ltd will implement various productivity management programs in the plant to improve the work environment, effective housekeeping and environment quality. All the necessary steps will be taken in the plant to meet standards prescribed by the Karnataka State Pollution Control Board /Central Pollution Control Board and KSEIAA.

ES.6 Risk Assessment and Disaster Management Plan

The plant proposes adequate number of portable fire extinguishers in various strategic areas of the plant including the control room, administration building, stores, pump house, etc., medium velocity water spray system will also be installed.

Occupational Health and safety

- All precautionary methods will be adopted by the company to reduce the risk of exposure of employees to occupational safety and health hazards.
- Pre & post medical check-ups will be done of all the employees. Employees will be regularly examined and the medical records will be maintained for each employee. Pulmonary function test and periodical medical checkup shall be done once in every year. The following tests will be conducted for each worker as Occupational health surveillance programme: Lung Function Test, Radiology – X-ray, Pulmonary Function Test, Audiometric Test.
- For the safety of workers, personnel protective appliances like hand gloves, goggles, aprons, ear mufflers, nose mask etc. will be provided.
- Proper ventilation system will be provided in the process area.

ES.7 Project Benefits

The company's management will recruit semi skilled & unskilled workers from the nearby villages, thereby improving in the social status of the villagers. It creates employment opportunities to 250-300 No.s directly & 500 No.s indirectly. Socio-economic status of the surrounding farmers will improve.

Further, the management will support the local administration and provide other form of assistance for the development of public amenities viz., water distribution, building of school rooms, health centres, Education programme, Health camps, Agricultural programmes & sponsorships to meritorious students.

Green belt will be developed within the plant premises, on either side of roads, on the plant boundary covering a total area of about 47 acres (33 % of total area). This will not only help to create healthy environment in the area but also acts as pollution sink. Further avi-fauna population of the area will increase.

With the implementation of the total project, the socio-economic status of the local people will further improve, there by infrastructure facilities like roads, communication systems, etc. will improve. The land rates in the area will further improve in the nearby areas due to the project. This will help in upliftment of the social status of the people in the area. Educational institutions will also come-up and will lead to improvement of educational status of the people in the area. Medical facilities will certainly improve due to the project.

ES.8 Environmental management plan

Table ES.5 EMP during operational phase of the project

Activity	Anticipated Impacts	Environmental Management Plan
1. Land		
Disposal of wastewater	Soil contamination & Groundwater contamination	Wastewater generated from the project will be treated in the proposed 1000 KLD ETP.
2. Air		
Boilers, Process, storage, transportation of raw materials and finished products, DG sets	Gaseous and fugitive emissions	<ul style="list-style-type: none"> • Boilers of 150 TPH and 100 TPH will be connected with ESP and to the chimney of 85 mts each. • 2 X 50 TPH boiler will be connected to the wet scrubber and 70 mts common chimney • 32 TPH incineration boiler will be connected to a bag filter and 80 mts chimney • 15 mts above the nearest working platform with acoustic enclosures will be provided for DG Set (2000 MVA) and HSD (High Speed Diesel) with sulphur content of <0.05% will be used for D.G.Sets. • Monitoring of stack emissions will be carried out monthly to ascertain the performance of the air pollution control equipments. • Ladder, porthole, power supply points are provided to the boiler for monitoring of emissions. • Water spraying will be adopted at loading and unloading points and storage yards which will reduce fugitive emissions due to movement of truck. • All the internal roads will be asphalted to reduce the fugitive dust due to truck movement. • Greenery cover will be provided. For this, the project has proposed to have greenery cover of 33% of the total site area. • A good housekeeping and proper maintenance will be practiced in the industry, which helps in controlling pollution. • Proper maintenance air pollution control equipment • Regular maintenance of vehicles and machinery's in order to control emissions.
	Bagasse storage	<ul style="list-style-type: none"> • Designing of stockpiles to reduce exposure to prevailing winds; • Minimising the distance that bagasse falls during movement; • Fully enclosing the bagasse handling conveyors,

Activity	Anticipated Impacts	Environmental Management Plan
		<p>particularly transfer points;</p> <ul style="list-style-type: none"> • Installing belt cleaning systems so that bagasse is not carried back on the underside of conveyor belts; • Implementing bagasse dust management plan that prescribes mitigation measures for unfavourable weather conditions; • Installing water spray system to reduce dust emissions around, and from, the site;
	Cane handling	<ul style="list-style-type: none"> • Water sprays dedusting. Plantation around source.
	Transportation	<ul style="list-style-type: none"> • Water sprinklers will be provided to reduce dust.
Vehicular traffic	Exhaust Emissions	<ul style="list-style-type: none"> • The conditions of the internal roads will be checked & maintained at least once in a year. • Trained securities will be deployed to guide the vehicles for smooth entry/exit without causing any traffic congestion. • Greenery development will create aesthetic environment and also acts as a pollution sink for dust emissions.
3. Surface and Ground Water		
Process Effluent, Sewage, Storm water run off	Ground water & soil pollution, flooding	<ul style="list-style-type: none"> • The process waste water/effluent including sewage from the domestic activities will be treated in proposed 1000 KLD ETP • Achieving Zero Discharge • Storm water drains will be provided to avoid flooding in the proposed Storm water gutters/drains will be constructed in the premises on either side of the haul roads (0.8 m X 0.6 m) and along the periphery of 1.0 m X 0.6 m • Garland channels will be provided around the storage yards. • As per estimation rain water thus collected and harvested of about 3,10,000 lts/annum will be used for greenery development/ sprinkling applications and non potable uses thereby conservation fresh water requirement. • Rainwater harvesting sump of capacity 350 KLD (10m X 10m X 3.5m) is proposed for implementation • 10 recharge shafts will be provided for the purpose of ground water recharge which will be constructed along the way of internal drains.
4. Geology and Hydrology		
Extraction of	Depletion of water	<ul style="list-style-type: none"> • Since, there is no water extraction from the borewell for

Activity	Anticipated Impacts	Environmental Management Plan
water	table	<p>the project, no impact anticipated.</p> <ul style="list-style-type: none"> • However, implementation of recharge to ground water body through rainwater harvesting. • Conjunctive use of surface and ground water ensures rise in ground water level and improves water quality.
5. Noise		
<p>Manufacturing process, cogeneration unit, transportation of raw materials and finished products, D.G Set operation, Vehicular traffic,</p>	<p>Increase in noise levels</p>	<ul style="list-style-type: none"> • Personnel working near noisy areas will be provided with adequate personal protective equipment such as earplugs and earmuffs, use of which will be strictly enforced. • Sophisticated and low noise generating equipments will be selected. • Proper mounting of equipments and providing noise insulating enclosures or padding where practicable. • The equipments will be maintained at all times to ensure permissible noise levels. • Appropriate advanced silencers, acoustic barriers; vibration-reducing pads will be provided for all noise generating equipments. • The sources of continuous noise generating equipment such as compressors, pumps etc will be designed to have noise level not exceeding 85-90 dB(A). • It would be ensured that there would not be any operator near the noise generating equipments on continuous basis. • Boundary walls and dense greenery will be erected to act as acoustic barriers. • Adequate and appropriate type of greenery will be developed in and around the proposed project site for noise mitigation in the area. • Proper maintenance of machineries especially oiling and greasing of bearing and gears etc. • 33 % land area around the factory is covered with greenery. It includes greenery of 6 to 10 m width around storage yards. • Trees are planted on either side of the roads with in the factory premise and with in the vicinity around the factory. • Trees species are selected as per guidelines of CPCB.
6. Solid and Hazardous Waste		
<p>Domestic garbage, solid waste from sugar industry,</p>	<p>Improper handling will affect the land/soil and water environment</p>	<ul style="list-style-type: none"> • Bagasse generated from the sugar plant will be sent to cogeneration unit to use it as fuel for boiler for power generation

Activity	Anticipated Impacts	Environmental Management Plan
cogeneration unit		<ul style="list-style-type: none"> • Boiler-Bottom ash, boiler flyash, lime grit, pressmud, ETP sludge will be mixed in required proportion and used as manure. • Used oil from DG sets, spent turbine oil, waste oil residue from ETP will be used as lubricant within the industry. • Domestic organic solid waste will be composted, while the inorganic solid waste will be handed over to Maigur Gram Panchayath.
7. Ecology and Biodiversity		
Green belt development	Improvement of local flora and fauna	<ul style="list-style-type: none"> • With the development of green belt inside the project, will increase the movement of birds, butterflies, etc positively. Watch & ward arrangements with proper watering during summer.
8. Socio-economics		
Quality of Life, Sharing of local resources	Employment generation, Improvement in quality of life, development of infrastructure facilities, increase in housing accommodation,	<ul style="list-style-type: none"> • There is a great possibility of industrialization in the vicinity of the proposed sugar complex. This is likely to bring drastic changes by transforming this backward area into an industrially developed one. • The project has very strong positive impact, which is likely to result in the improvement of economic situation of Maigur Village and Hippargi Village • Overall peoples' perception on the project is a mix of advantages and disadvantages. On one hand, they expect job opportunities, market expansion etc. as advantages and on the other hand they are worried about the damage to agriculture. • As an impact of identification of the project, small-scale industrial economy is likely to flourish in the surrounding area. The small-scale industrial units are expected to get financial supports from the financial institutions and banks. In this way, an overall development may take place in this area. • The process of development will have maximum impact on the lifestyle of the local people. The project and the consequent peripheral industrial economy will generate income to the local and migrated people which will increase the aggregate demand. This demand will get realized in the market and finally, lead to the market in the locality of the project. Market expansion supported by expected infrastructural developments like roads, electricity, water supply etc. will result in improving the economic development in the entire region.

Budgetary provision

Capital investment to be made on environmental management measures of Rs. 2668 lakhs and Rs. 82 lakhs/ year will be reserved for the recurring cost.