

EXECUTIVE SUMMARY

CHAPTER 1: INTRODUCTION AND BACKGROUND

About the project proponents: Mr. Ramchandra Dhirendrarao Mahuli is a I/C Managing Director of M/s Rajarambapu Patil Sahakari Sakhar Karkhana Ltd. Rajaramnagar At Post Sakharale, Tal: Walva Dist. Sangli, Maharashtra.

About the proposed project:

M/s Rajarambapu Patil Sahakari Sakhar Karkhana Ltd. is proposing expansion of sugar project capacity 4000 TCD 7000 TCD and installation of 28 MW of co-generation plant. M/s Rajarambapu Patil Sahakari Sakhar Karkhana Ltd. located at Rajaramnagar, At Post Sakharale, Tal. Walva Dist. Sangli Maharashtra. The Plot admeasures about 225 acres. The Notification no. S. O. 1533 promulgated on amended notification 2011 have covered these types of industries under its entry is 5(j) Sugar 5 (g) Distillery and 1(d) Captive power plant. TOR sanctioned on minutes of 30th reconstituted expert appraisal committee (industry) meeting held on 30th 31st July and 1st August 2014.

CHAPTER 2: PROJECT DESCRIPTION:

- i. **Location of the project:** The proposed expansion project is at located Rajaramnagar At Post Sakharale, Tal: Walva Dist. Sangli and Maharashtra having area of 225 acres. The geographical location of the industry is Latitude: N 17°04'8.43" N and Longitude: 74°17'18.63" E with an elevation of 582m above Mean Sea Level (MSL).
- ii. **Description of the Manufacturing process:**

The manufacturing process for sugar comprises of following steps-

- Cane weighing and unloading system
- Cane handling and preparatory system
- Milling system
- Juice clarification system
- Evaporation

- Vacuum pan boiling and crystallization
- Storage packing and warehousing
- Final molasses storage
- Effluent treatment

iii. **Project Cost:** The Total project cost is **22346.81 Lacks, EMP cost 552 Lacks, CSR cost - Lacks**

iv. **Raw materials:** The main raw material for this industry is Sugarcane and same is available from command area.

v. **Water management:** The water requirement is about 1100 M3/Day for Domestic, Greenery and Processes. The source of water is from MIDC Islampur and the same of adequate and satisfactory,

vi. **Utilities:**

Power: M/s Rajarambapu Patil Sahakari Sakhar Karkhana Ltd Power requirement 2700 kw/hr for unit connected load available through Govt. Electricity however the same will be generated in house from turbine. DG set will be used only in emergency backup of capacity **320 KVA.**

Boiler: The Capacity of boiler 140 TPH boilers outlet steam 110 ata 540 50c bagasse used as fuel for the boiler.

Use of steam: the sugar plant process steam requirement will be 122.5 TPH at 2.5 ata or 1.4 TPH clarifications from consultant at 8 ata steam. Since steam is available from the TX extraction at 8 ata the same will be used for centrifugals and sulphur burner system. The exhaust steam at 8 ata the same will be used for centrifugals and sulphur burner system. The exhaust steam will be used for the 2.5 ata process requirement.

Cooling Tower-

vii. **Waste Water Generation:** Waste water generation from different source is 368 m3/day. The sources of wastewater generation from sugar plant are mainly from the mill house, boiling house pumps, centrifugal pumps and discharges from laboratory.

- viii. **Waste Water Treatment:** The oil and grease contamination from the mill effluent are normally removed even before reaching the WTP. The milling and power plant effluent will be combined as one stream. Process house effluent will be another stream. Both the streams will have separate provisions for grit removal oil and grease removal as well as notches for flow measurement. The combined stream of sugar and co-generation plant effluent will have another trap for grit/oil/grease removal. The total wastewater generated will not exceed 1250 cum/d having BOD about 2000mg/l. all the wastewater generated will flow into equalization pond of suitable size.
- ix. **Air emissions:** The air pollution caused by this industry is mainly from boiler. The boiler will be provided with Electro Static Precipitator to combat dust concentration.
- x. **Solid Waste Management:** The main solid waste from factory will be of non-hazardous from office, garden, Effluent treatment plant. Non hazardous waste will be segregated as compostable and saleable. Hazardous solid waste such as yeast sludge and Boiler Ash are mixed with press mud and converted to bio compost will be made available to nearby farmers.

CHAPTER 3: DESCRIPTION OF ENVIRONMENT

Base line environmental studies were carried out, as per TOR received from MoEF, Dehli

Study area: The study area is defined as area within 10 km radius from proposed site boundary.

Land use / land cover:

A recent satellite image for study area was collected from NRSC. The image was interpreted for identification of various land use / land cover classes. Ground truthing was done to confirm and edit the interpreted land use / land cover classes.

Land use of the study area has been classified into following categories. The major portion of land is covered by Agriculture land.

Land use/ Land cover Statistics of the Ten square Km Area

Sr. No.	Classes	Area (Ha)	Area (%)
1	Water body	3596	1.027
2	Agriculture	48479	13.851
3	Current Fallow	240486	68.707
4	Long Fallow	8972	2.563
5	Vegetation	13616	3.890
6	Open Scrub	24869	7.105
7	Built up Land	5178	1.479
8	Barren Land	4820	1.377

Meteorology:

As per requirement of Terms of Reference, the hourly baseline meteorological data were collected by setting up meteorological station at the site. Minimum temperature recorded during study period was 14.9°C during the month of November with maximum temperature of 32.4°C during the month of October. The average relative humidity recorded was 58% the month of December. Meteorological data shows that mean average wind speed during study period are 5.7 km/hr where as maximum wind speed during study period is 29.6 km/hr during the month of November.

Ambient Air quality

Ambient Air Quality monitoring stations were set up at 9 different locations. Parameters recorded are as follows:

- PM2.5
- PM 10

- SO₂
- NO_x
- CO
- HC

The observations are as follows:

- Maximum concentration of SO₂ was 11.5µg/m³ at Project Site and Minimum was 7.3µg/m³ at village Waghwadi.
- Maximum and minimum concentration of NO_x was 13.2µg/m³ at project site whereas minimum concentration recorded 9 µg/m³ at village Tambve.
- Maximum and minimum concentration of PM₁₀ was 52.3µg/m³ at project site and 27.2µg/m³ at village Tambve.
- Maximum and minimum concentration of PM_{2.5} was 28.5µg/m³ and at project site and 9µg/m³ at village Borgaon.
- Maximum and minimum concentration of CO 0.39 mg/m³ at project site and minimum concentration 0.08 mg/m³ at village Ahirwadi.

Concentrations of HC were Below Detectable limits at every site.

Noise

Noise levels were recorded at 9 different locations within the study area. Noise monitoring was carried out on date 15, 18, 22 November 2014. Observations are as follows:

- The maximum noise level at Project site on day time is 52.8 dB(A) and on nighttime is 43.75dB(A)
- The minimum values day & night time were found to be 52.03 Db(A) and 42.45 dB(A) Respectively

This is within the permissible limit given by CPCB i.e. day time 55 dB (A) and night time 45dB (A).

Soil:

Soil samplings were carried out at 9 locations in the study area. Observations are as follow:

- Soil at and around site area is dark brown to black colored cotton soil most commonly associated with Deccan plateau.
- As per Soil Classification, the soil within study area is mostly Silty Clay Loam and Silty Loam

Ground water quality:

Ground water sampling were carried out at 9 locations of the study area and analyzed for parameters mentioned in the Indian Standard IS 10500:1991. Observations are as follows

- TDS and Hardness is found to be high in few locations, the TDS level of Village Bahe is 2532 mg/lit which is above the permissible limit. And Hardness of Village Kameri is also above permissible limit i.e. 707.07 mg/lit.
- All heavy metals are found to be below detectable limit.

Ecology and Biodiversity: The list of floral species is prepared based on visual observation during site visit and thorough review of site literatures and secondary data available with various government offices are referred for identifying rare or endangered species in the region. There are no endangered species of flora and fauna in the study area. There are no reports with the forest department about endangered species or notified protected species. Vernacular species are present in study area. Indian species such as *Hyena, Jackals, wild Pigs, red fox and panther*. Typically vegetation is composed of natural and cultivated type. Like *babhul, neem. Beshrami* is common weed in wet areas. There are about sixty species of fish available in rivers, tanks, ponds. No threaten on flora and fauna in study area.

Socio-Economic Study:

Social survey is conducted 28^h October, 2014 to 30th October, 2014 in 28 villages to collect factual information by involving community. For secondary data primary census abstract of 2001, Government of India has been used

Sangli district population is 28,22,143. It is 14th largest District in the state by population.

State:	Maharashtra
Population (Census 2011):	2,822,143
Population density:	329 persons/sq.km
Male population	1,386,415
Female population:	1,386,415
Sex Ratio:	964
Total Literacy rate:	83%
Male literacy rate:	90%
Female Literacy Rate:	75%
Area square kilometer:	8,573

- The project is not going to cause any damage to existing agricultural situation
- The project has very strong positive employment and income effects, both direct and as well as indirect.
- The project will have positive impact for health, agriculture development, agro-based enterprises and employment opportunity.

CHAPTER4: ANTICIPATED ENVIRONMENTAL IMPACT IDENTIFICATION, PREDICTION AND MITIGATION MEASURES

1. Air Environment:

Impacts

Various identified sources, in production of Alcohol that can cause potential impacts on air quality are emissions from:

- Emission during construction phase
- Emissions during operation phase
- Emission from DG sets during power failure/ emergency purpose
- Emission form vehicular movement

Mitigation measures for air quality impacts will include:

- Air pollution control equipments like ESP attached to boiler;
- Effective water spraying will be carried out on the access roads to control re-entrained dust during dry season (if required);
- Plantation within project premises and around the boundary will be done;
- Ensuring the availability of valid Pollution under Control Certificates (PUCC) for all vehicles used on site.
- Proper periodic maintenance will be all air pollution control equipments will be carried out to ensure its efficient operation.
- The methane from ETP shall be trapped and used as fuel as boiler.

Fugitive Emissions

A number of mitigation measures are taken to control fugitive emissions, the presence of which will be taken to Noticeable by plain vision if not controlled. Following are the measures:

- Rubber wheel carts /trucks to bring in Raw materials, not filled high, sides cladded, slow speed travel , avoiding vibrations
- Engineering the plant layout in such a way so as to virtually Eliminate need of using heavy equipment for material handling in the main plant

2. Noise Environment

The proposed plant operations and related activities will lead to emission of noise that may have significant impact on the surrounding communities in terms of increase in noise levels and associated disturbances.

Impacts

Following activities would result in increase in noise level:

- Operation of Plant
- Construction activity
- Vehicle / traffic movement

Mitigation measures for noise related impacts will include:

- Proper care shall be taken at the time of installation to insulate / enclose all the noise sources to avoid occupational exposure to the work and also to minimize the generation of excess noise level.
- Monitor the ambient noise level and work zone noise level as per the monitoring schedules to conform the stipulated norms
- Noise attenuation devices such as ear mufflers must be provided to the workers in the high noise exposure areas.

3. Water Environment

The proposed project will utilize 1100 cum/day water during operation phase. The source of water will be from MIDC Islampur. Total wastewater generation from proposed project is 368cum/day. This waste water shall be used to generate Biogas and to produce Bio-compost.

Impacts

- Water scarcity will be there and need of ground water development
- Impact on water quality

Mitigation measures to reduce ground water related impacts are:

- Efforts will be made to reduce water requirement by recycle and reuse of process waste water etc;
- Treated wastewater will be used for irrigation and zero effluent discharge.
- Recharge pits for rainwater harvesting will be made to improve groundwater condition;
- Domestic waste water shall be reused for Green belt
- Provision of RCC settling tank to avoid any leaker of any solution into groundwater, surface water and soil.

4. Land

The study area covers 314 km². In that context the likely change in land use and land cover due to the project is likely to be in the order of 0.01-0.02% of the entire area, a relatively modest figure. Also as per the environmental risk categorization it comes under moderate risk level where the activity can operate subject to management and or modification.

Impacts

Potential Impacts on the Land Use and land cover shall be due to the project are given below:

- Land Acquisition
- Site preparation
- Waste disposal
- Green belt development (Positive Impact)

Mitigation measures to reduce Land Use and land cover related impacts are:

- Optimization of land requirement through proper site lay out design will be a basic criteria at the design phase;
- As the Site is surrounded by Agriculture land as LU map suggest so care should be taken for the waste disposal.
- Development and maintenance of green belt within project premises, a positive impact is envisaged.

5. Soil

Impacts

Potential impacts on soil due to production of sugar and co-generation activities are given below:

- Impacts during construction phase
- Impacts during operation phase

Mitigation measures to reduce soil related impacts are:

- There is no major construction activity will be carried out. So there is no negative impact of on soil due to construction activities.
- Maintaining soil quality, soil samples will be collected and tested at regular intervals.

- Waste water will be treated in ETP. No waste water disposed inland waste water will be discharged.
- No impact on soil is anticipated during operation phase as no waste is being dumped on land
- Ash generated will be sale to brick manufactures

6. Socio-Economic

Critical analysis of socio-economic profile of the area vis-à-vis its scenario with proposed project activities indicate that the impacts of the project are expected to be of varying nature.

Impacts

The impacts predicted will be on following Environmental components:

- Population
- Education
- Employment Generation
- Infrastructure
- Sanitation/Public Health
- Agriculture

Mitigation measures to reduce socio-economic related impacts are:

- Construction and maintenance of the approach road at regular interval will be carried out by the project proponent;
- The proper sign board will be placed for smooth flow of traffic;
- The parking space/facilities will be provided within the premises of the factory by the project proponent to minimize the accidents and traffic;
- The Continuous Monitoring of Air and Water will be carried out as agricultural fields are just found adjacent to the site;
- Valuable Bio-compost will be sold at cheaper price to local farmers
- Budgets for CSR activities in the study area.

8. Ecology and Biodiversity

Based on study conducted for ecology in the study area, no rare or endangered terrestrial and aquatic flora/fauna were noted in the study area.

The developed greenbelt and green cover in the project area would increase the flora and fauna density in the area at the project site

9. Occupational health community Health and safety

Impacts on Occupational Health, Community Health and Safety listed below:

- Impact during site development or demolition of some old structures for modification.
- Impact on community health due to various transportation activities, like Noise pollution, Dust pollution, potential damages to village road. Due to this lot of inconvenience may happen to local community.
- Occupational risk during working at heights, during welding etc for Construction activity.
- During storage, handling and disposal of waste water, Risk to community health due to spillage in surrounding area if not stored properly.
- Risk during operation of co-gen power plant, like boiler operation, turbine operation etc.
- Risk due to fire for all type of storages.

Mitigation Measures:

- By using PPEs during process impacts on occupational health and safety shall be overcome.
- Occupational health and Safety surveillance program will be carried out
- The sugar and co-generating plant instrumentation and control will be designed to ensure safe and reliable operation minimizing manual action and alert operators on conditions and situations requiring manual interventions in a timely manner.
- Continuous CSR activities shall be there by proponent such as construction of approach roads, various awareness programs
- By providing well designed fire hydrant system.
- Good lighting in power and sugar plant will facilitate operations and maintenance activities and ensure safety of working personnel.

CHAPTER5. ANALYSIS OF ALTERNATIVES

i. Site selection

There is no need for site selection. The proposed expansion project M/s Rajarambapu Patil Sahakari Sakhar Karkhana Ltd already established at Rajaramnagar at Post Sakharle, Tal Walwa Dist. Sangli Maharashtra

ii. Technology Process:

Sugar processing

- The present milling system equipment for 2500 and 3000 TCD is not sufficient for cane handling, feeding and conveying 7000 TCD of sugar cane.
- The existing two W/L milling tandems shall be replaced with new five mills of appropriate size.
- The mills will be high set to help ease to operation, maintenance and housekeeping.
- Moisture in bagasse is maintained below 49%.

Co-generation plant

- The high pressure co-generation plant is selected to utilize bagasse as non-conventional fuel.
- The new co-generation power plant will replace the existing low pressure boiler and turbo generator.
- The use of biomass for generation of power as source of renewable energy.
- It is an efficient and cost effective to save energy and reduce pollution.

CHAPTER 6: ENVIRONMENTAL MONITORING PROGRAMME:

Environmental Mitigation

During the operation phase environmental management plan will be designed to avoid or minimize impacts to the environment and local communities wherever practicable & desirable. Where residual impacts remain, which may have moderate or significant effects on the environment, mitigation measures have been described in this EIA Which will either reduce the impact to an acceptable level or adequately offset it. Some major mitigation measures are:

- High efficient Electro static precipitator and other air pollution control equipments will be provided to control pollutants from air emissions.

- Plantation within project premises and around the project boundary will be developed as per the green belt plan;
- Rain water harvesting to ensure maximum recharge.

Environmental Monitoring

The following will be monitored on a regular basis during operation phase and also throughout the life of the project to ensure that a high level of environmental performance is maintained:

- Periodic monitoring of PM10, PM2.5, SO2 and NOX will be carried out during the operational phase.
- Post project sampling and effect on baseline data generated during preparation of EIA report
- The general effectiveness of pollution control measures shall also be monitored.
- The one-time expenditure for environmental management and mitigation is estimated to be Rs.552 Lakh.
- The recurring expenditure for environmental management and mitigation is estimated to be Rs.-----

CHAPTER 7: ADDITIONAL STUDIES

Hazard Identification and Consequence Assessment

Identification of hazards in the proposed plant is of primary significance in the analysis, Quantification and cost effective control of accidents involving chemicals and process. A classical definition of hazard states that hazard is in fact the characteristic of system/plant/process that presents potential for an accident.

Planning:

On-site and Offsite emergency plan will be prepared as per the factory act and will be prepared as per Rule no. 12 of factory act (control of Industrial Major Accident Hazard Rules, 2003) as per the guidelines given in Schedule 6. It is absolutely necessary to train & carryout mock drills for success of emergency plan during actual emergency. Emergency procedures should be laid down clearly and convincingly to everyone on site, particularly the KEY PERSONNEL & ESSENTIAL WORKERS.

Public consultation

Details of Public consultation will be incorporated after conducting Public hearing for the project as guided by SPCB.

CHAPTER 8: PROJECT BENEFITS

The proposed project on implementation will generate potential jobs directly, and will also generate many indirect job opportunities.

- The proposed expansion project will lead state in production of sugar.
- There will be a beneficial effect of a flourishing production it that will directly and indirectly boost the living standards of the people and with increase in industrial activities, create more jobs in the local economy.
- The activities would result in an increase in local skill levels through exposure to proposed technology.
- Development of ancillary activities resulting into indirect jobs and skills of local manpower

CHAPTER 9: ENVIRONMENTAL MANAGEMENT PLAN

The EMP provides a delivery mechanism to address potential adverse impacts, to instruct contractors and to introduce standards of good practice to be adopted for all project works. For each stage of the program, the EMP lists all the requirements to ensure effective mitigation of significant biophysical and socio-economic impacts identified in the EIA.

- Energy and water conservation practices will be adopted.
- Green belt development plan is designed for project over **28329 M3** With variety of plants.
- Total rainwater generated and harvested through built-up and open area, and green belts from the project area is about **58975.27 M³ (58975270 Liters)**. To conserve this water one recharge pit of adequate size 10 X 5 X 3 Meters is proposed. The proposed recharge pit can shifted as per the availability of open land, direction & slope of harvested water channel.

CHAPTER10: CONCLUSION

All the possible environmental aspects have been adequately assessed and necessary control measures have been formulated to meet with statutory requirements. Thus implementing this project will not have any adverse impacts on surrounding environment. At the same time, income generation capacity will also improve in the area by direct and indirect employment leading to socio-economic development in the area. Hence proposed project will be a welcome development.