EXECUTIVE SUMMARY

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT

FOR

PROPOSED EXPANSION OF SUGAR PLANT FROM 3500 TCD TO 10000 TCD & COGENERATION POWER PLANT FROM 15MW TO 40MW AT KANADKHED, TAL. PURNA, DIST. PARBHANI, MAHARASHTRA BY M/S. BALIRAJA SAKHAR KARKHANA LIMITED

PROJECT PROPONENT

M/S. BALIRAJA SAKHAR KARKHANA LIMITED

AT KANADKHED, TAL. PURNA, DIST. PARBHANI, MAHARASHTRA.

1.0 Introduction

M/s. Baliraja Sakhar Karkhana Limited is a Company registered in the State of Maharashtra under the Companies Act, 1956, dated 27th January 2000 (Certificate of Incorporation number 25-14423 dated 27th January 2000). It has targeted the objective of engaging in the business of manufacturing Sugar & Power.

Currently M/s. Baliraja Sakhar Karkhana Limited running a 3500TCD Sugar & 15MW Cogeneration Plant at Gut No. 149, 165 & 166 at Village-Kanadkheda, Tal-Purna, Dist-Parbhani, State-Maharashtra.

Industry has obtained Renewal of Consent to Operate from the Maharashtra Pollution Control Board, Consent no. Format1.0/CAC/UAN No. MPCB CONSENT-0000213013/CR/2411001071 issued date 19/11/2024 and valid up to 31/07/2025.

Now industry is proposing the expansion of Sugar Plant from 3500TCD to 10000TCD & Cogeneration Power Plant from 15MW to 40MW at existing premises. In response to the increasing market demand and the availability of sugarcane, the industry has chosen to expand its Sugar crushing capacity.

As per EIA Notification dated 14th September, 2006 and its subsequent amendment, the project falls under Category “B” Project, or Activity 5(j) Sugar industry & 1(d) Thermal Power plant. Project will be appraised at State Level Expert Appraisal Committee.

Accordingly, the project proponent has submitted prescribed application along with Pre-feasibility report to the SEIAA, Maharashtra on Parivesh portal dated 22/11/2024 Proposal no. (SIA/MH/IND2/505867/2024) for Terms of reference (TOR).

SEAC- I Maharashtra has granted Terms of reference (ToR) for expansion of Sugar and Cogeneration unit dated 13/12/2024 File No.: SIA/MH/IND2/505867/2024 and ToR Identification No. TO24B2506MH5104056N. dated 13th December 2024.

Based on the granted ToR, Environmental Impact Assessment studies was carried out and draft EIA report has been prepared. Draft EIA report is submitting to Sub Regional officer, Parbhani for the public hearing.

2.0 Project Location

The project is located at Gut No. 149, 165 & 166 at Village-Kanadkheda, Tal-Purna, Dist-Parbhani, State-Maharashtra. The project is geographically located at 19°10'8.45"N and 77°2'3.58"E and at 415m above MSL. The proposed expansion will be carried out in existing factory premises. No eco-sensitive zones like Tropical Forest, Biosphere reserve, National Park, Wild life sanctuary, and Coral formation reserves is located within 5km and 10km from project site.

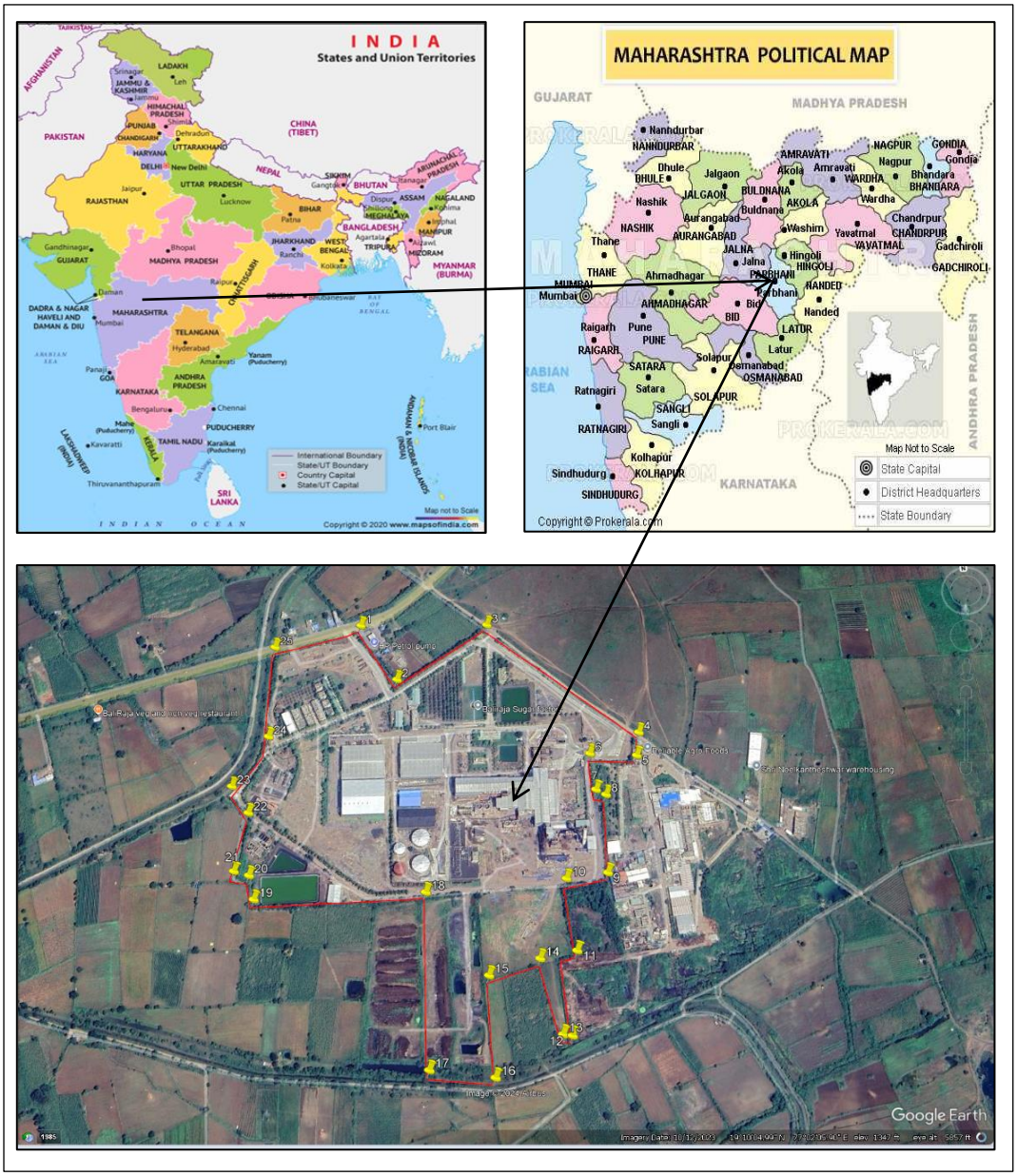

Figure 1: Project Location

3.0 Project Description

Sr No	Particulars	Existing Sugar 3500 TCD & 15 MW Cogeneration	Expansion Sugar 6500 TCD & 25 MW Cogeneration	After expansion 10000 TCD & 40 MW Cogeneration
1	**Name of the Company**	M/s. Baliraja Sakhar Karkhana Limited		
2	**Location**	Gut No.148,149,151,152,158,164,165,166 Village-Kanadkheda, Tal. Purna, Dist.-Parbhani, State-Maharashtra.		
3	**Constitution of the Organization**	Private Limited		
4	**Capacity of the Project**	3500TCD & 15MW	6500TCD & 25MW	10000TCD & 40MW
5	**Products**	Sugar: 64,400 MT	Sugar: 1,19,600 MT	Sugar: 1,84,000 MT
		Power: 15 MW	Power: 25 MW	Power: 40 MW
6	**By products**	Bagasse: 168000MT	Bagasse: 3,12,000MT	Bagasse: 4,80,000MT
		Molasses: 23,800 MT	Molasses:44,200MT	Molasses: 68,000 MT
		Pressmud:23,800 MT	Press mud: 44,200 MT	Press mud:68,000MT
7	**No. of Working Days**	160 Days	160 days	160 days
8	**Total Land**	Total 29.37 ha		
9	**Greenbelt**	23157.67 sq.mtr	73859.14 sq.mtr	97016.81 sq.mtr
10	**Raw material & Requirement**	Sugar Cane: 5.6 Lakh MT Bagasse: 146254 MT	Sugar Cane: 10.4 Lakh MT Bagasse: 243756.7 MT	Sugar Cane: 16.0 Lakh MT Bagasse: 390010.7 MT
11	**Water requirement**	Fresh water: 275 CMD Domestic: 70 CMD	Fresh water: 282 CMD	Fresh water: 557 CMD. Domestic: 70 CMD
12	**Boilers**	80 TPH & 14 TPH	110 TPH	Existing: 80TPH & 14TPH Proposed 110 TPH
13	**DG set**	2 X 500 KVA	-	2 X 500 KVA
14	**Power**	3.0 MW	8.0 MW	11.0 MW
15	**Steam**	64 TPH	118 TPH	182 TPH
16	**Fuel**	Bagasse:147316.36TPA	Bagasse: 168960.TPA	Bagasse:316276.4TPA
17	**Effluent Generation**	Effluent:280 CMD Domestic: 70CMD	Effluent: 647 CMD	Effluent: 927 CMD
18	**Effluent Treatment**	ETP of 500 CMD	Upgraded from 500 CMD to 1000 CMD	ETP 1000CMD

19	**APC system**	Existing 80TPH Boiler Provided: 81m common stack height and ESP. Existing 14TPH Boiler Provided: 81 m common stack height and Wet Scrubber	Proposed 110TPH boiler with 80m stack height provided with ESP	Existing 80TPH Boiler Provided: 81m common stack height and ESP. Existing 14TPH Boiler Provided: 81 m common stack height and Wet Scrubber Proposed: 110TPH boiler with 80m stack height will be provided with ESP
20	**Manpower**	170 Nos	120 Nos	290 Nos
21	**Project cost**	173.5998Crs.	200 Cr	373.59 Cr

4.0 Basic Raw Material

4.1 Land Requirement: Total 2935858 Sq.m land is in possession of M/s. Baliraja Sakhar Karkhana Limited., (BSKL). The proposed expansion will be in existing premises of factory. No additional will requires for the expansion project.

4.2 Raw Material:

Details of the raw materials required for process, their Source of procurement and mode of transportation is given in Table-

Table No 1: Raw material requirement

Sr. No	Raw material	Existing	Expansion	Total	Source and transportation
1	Sugar cane	5.6 Lakh	10.4 Lakh	16.0 Lakh	Nearby farms & road
2	Bagasse for cogeneration	146254 MT	243756.7 MT	390010.7 MT	Own Sugar unit

4.3 Water Requirement:

Fresh water is sourced from Purna river. Factory has obtained permission from Irrigation Department; Govt. of Maharashtra for lifting the water. For existing project the total water requirement is 1365 CMD. After expansion it will be 3390 CMD in which 2763 CMD water will be recycled and 627CMD fresh water will be required.

4.4 Steam Requirement: Total steam generation for Sugar factory & Cogeneration Unit: Existing 80TPH, 14TPH & Proposed 110TPH

Steam requirement will be 182TPH for 10000TCD.

- Existing Sugar Steam requirement: 64TPH for 3500TCD Sugar
- After expansion Steam requirement: 182TPH for 10000TCD Sugar

4.5 Power Requirement:

• At Present: 3.0 MW/Hr for 3500TCD Sugar plant and Cogeneration

• After expansion: 11 MW/Hr for 10000TCD Sugar plant and Cogeneration

Power requirement will be fulfilled from cogeneration power plant

4.6 Manpower Requirement:

Construction Phase: 150 people will be required for the construction phase

Operation Phase: Existing 170 Persons and additional 120 Manpower will be hired from local.

4.7 Project Cost: Capital cost of the proposed sugar expansion & Cogeneration will be Rs. 373.59 Cr. approximately.

5.0 Baseline Environment

The project is located at Gut No. 149, 165 & 166 at Village-Kanadkheda, Tal-Purna, Dist-Parbhani, State-Maharashtra. The project is geographically located at 19°10'08.45"N and 77°02'03.58"E and at 415m above MSL. The study area is considered to be within 10km radius of the project site for baseline environment monitoring. The studies were conducted during post-mansoon season for the period of 1st October, 2024 to 31st December, 2024

5.1 Ambient Air Quality: Within a 10-kilometer radius of the project location, eight samples were collected. A well-designed air quality monitoring network was established to collect the existing ambient air quality data. The monitoring locations were selected with respect to the prevailing wind pattern.

- **Particulate Matter (PM_{10}):** The maximum 69.9µg/m^3 concentration of PM_{10} was observed at project site and minimum 60.6µg/m^3 concentration was observed at Purna village. Average concentration of PM_{10} was observed range from to 59.6 µg/m^3 to 64.1 µg/m^3.
- **Particulate Matter ($PM_{2.5}$):** The maximum 29.8 µg/m^3 concentration of $PM_{2.5}$ was observed at Project site while minimum concentration was observed at 20.3µg/m^3

concentration was observed at Purna village. Average concentration of $PM_{2.5}$ was observed range from 19.9 µg/m^3 to 25.0 µg/m^3.

- **Sulphur Dioxide (SO_2):** The maximum 9.9 µg/m^3 concentration of SO_2 was observed at Hatkarwadi and Barbadi village while minimum 6.1 µg/m^3 concentration was observed at Purna village. Average concentration of SO_2 was observed range from 6.6 µg/m^3 to 7.98 µg/m^3.
- **Oxide of Nitrogen (NO_x):** The maximum 12.8 µg/m^3 concentration of NOx was observed at Project site and Gaur village while minimum 8.3 µg/m^3 concentration was observed at Barbadi village. Average concentration of NOx was observed range from 9.66 µg/m^3 to 10.25 µg/m^3
- **Carbon Mono-oxide (CO):** The maximum 0.9 mg/m^3 concentration of CO was observed at Nila and Hatkarwadi village while minimum 0.2 mg/m^3 concentration was observed at Gaur village and Barbadi village. Average concentration of CO was observed range from 0.3 mg/m^3 to 0.5 mg/m^3
- Inference: All the parameters were found well within the prescribed limits of NAAQ Standard, CPCB.

5.2 Noise Level: Within a 10-kilometer radius of the project location, nine samples were collected. Noise monitoring was carried out as per MoEF and CPCB guidelines. To understand the Noise Quality with respect to zone category, twelve representative locations were selected. Noise monitoring was carried out from time 06:00 Hrs to 22:00 Hrs and Night Time -22:00 Hrs to 06:00 Hrs. Obtained results are compared with Noise pollution rules 2000. All values during day and night period are under the permissible standards.

5.3 Surface water Environment: Surface water sampling has been done at eight locations distributed in the study area.

- **pH:** pH of the all-surface water sample is 7 to 7.85
- **Total Dissolved Solids:** The dissolved solids consist mainly of bicarbonates, carbonates, sulphates, chlorides, nitrates and possibly phosphates of calcium, magnesium, sodium and potassium. The amount of dissolved solids present in water is a consideration for its suitability for domestic use. Results show the ranges of TDS 298 mg/l to 640 mg/l.
- **Biological Oxygen Demand (BOD):** Ranges of BOD range of 5mg/l to 41 mg/l.

- **Chemical Oxygen Demand:** Ranges of COD range of 10mg/l to 95.4mg/l.
- **Total Hardness:** The desirable limit for total hardness, as per the Indian standards is 200 mg/lit and ranges of total hardness of 149 mg/lit to 216 mg/lit.

  Total hardness of 216 mg/lit was observed at Down Stream Purna River, Total hardness of 166 mg/lit was observed at Lake Water Kanadkhada, Total hardness of 187 mg/lit was observed at Canal Water, Total hardness of 171 mg/lit was observed at Lake Water South East Side of Factory, Total hardness of 188 mg/lit was observed at Upstream Purna River, Total hardness of 192 mg/lit was observed at Laxmi Nagar.
- **Chloride:** The concentrations of the chlorides of all samples were between 22.3 to 97.3 mg/lit.
- **Sulphate:** The concentration values ranged from 12 to 65.4 mg/lit.

5.4 Ground Water: Groundwater sampling has been done at eight locations distributed in the study area.

- **pH**: The pH is a measure of the activity of the (solvated) hydrogen ion. The range of pH is Acidic to alkaline (6.6 to 7.69)
- **Total Dissolved Solids:** The dissolved solids consist mainly of bicarbonates, carbonates, sulphates, chlorides, nitrates and possibly phosphates of calcium, magnesium, sodium and potassium. The amount of dissolved solids presents in water in the range of 410 to 482 mg/l.
- **Total Hardness:** The values of the samples analyzed are in the of 132 to 255 mg/l
- **Chloride:** The chloride values are in the range on 26.6 to 65.4 mg/l.
- **Sulphate:** The concentrations of sulphates in the in the range on 27.2 to 52.3 mg/l.

5.5 Soil Environment: A 10-kilometer radius around the project location was used to collect eight samples.

- The soil being of friable consistency, the bulk density & water holding capacity of the soil is in the range of 0.64 to 0.93 g/cm3 & 53 -58 respectively.
- The pH of the soil in the study area is in the range of 7 to 8.11.
- The (Electrical Conductivity) of the soil extract in the study area is in the range of 291 -2890 µS/cm which is less than 2 mS/cm indicating no salinity problem to be expected in the soil. CEC is in between 1.0 to 5.8 meq/100g.

- Organic matter is in the range of 0.4 to 4.1 % and total organic carbon is in the range of 0.2 to 3.8 %
- Available phosphorous potassium and nitrogen, of the soil samples are found to be in the range of 23.1-54.3, 9.0-38,97.0-171.3 & mg/kg respectively.
- Soil samples were also analyzed for heavy metals such as Zinc (Zn), Iron (Fe) and Copper (Cu) and their concentrations are presented in the presence of heavy metals at proper pH enhances the microbial activity. In soil. The concentration of heavy metals found in the study area is normal.

5.6 Ecology

As per guidelines of MoEF for Environmental Impact Assessment, the study area was restricted upto 10 km periphery of the project site. An ecological survey of the study area was conducted, as per following steps, with reference to listing of species, assessment of the existing baseline ecological conditions and predicting impacts with suggestive mitigation measures. The data were generated with reference to topography, land use, vegetation pattern, animals etc

Flora:

A total of 77 species of flora were recorded from the study area. 30 species of trees were encountered in the study area out of which 18 species are indigenous and 12 are introduced. Babhul (Vachellia nilotica). Hivar (Vachellia nilotica), Bor (Ziziphus mauritiana), Apta (Bauhinia racemosa), Sissoo (Dalbergia sissoo) are some of the other common native species. 14 species of shrubs were recorded from the study area out of which only five are indigenous and nine are introduced. Three out of the nine introduced shrubs are invasive viz. Tantani (Lantana camara), Ranmari (Chromolaena odorata) and Besharam (Ipomoea carnea). Out of the 21 herb species recorded from the area 14 are indigenous and seven introduced and two are invasive out of the introduced species. Five species of climbers were recorded out of which four are native and only one species is introduced and invasive. Seven species of grasses, sedges and bamboo were recorded from the study area.

Fauna:

Birds:

A total of 58 species of birds were recorded during the survey in the study area. 28 species out of 58 are aquatic which indicates to a presence of good aquatic habitat in the study area. The greatest aquatic bird diversity was at location EB6 on the Purna River.

Butterflies:

Four butterfly species were observed during the survey. As the survey was conducted in dry season the butterfly diversity encountered is less. In the post-monsoon season the diversity is bound to be more.

Mammals:

Three species of mammals were encountered viz. Grey Langur, Indian Grey Mongoose and Three-striped Palm Squirrel. Local people revealed that Wild Boar and Indian Jackal are also present in the study area. Both these species are not in Schedule I.

Reptiles and Amphibians:

One species of reptile was encountered during the survey viz. Oriental Garden Lizard (Calotes versicolor). Interviews of local people revealed presence of Indian Rat Snake and Russell's Viper snakes.

No amphibians were encountered during the survey.

5.8 Socio Economic Survey:

According to recent censes (2011) while dealing study area (10 Km radius from project site) as per secondary data the Total Population of study area is in which Male Population is 51% and Female Population is 49%. Child population (0-06 years old) in study area is 13.84%. Total number household in study area is 22628 and household size is 4.25. In the study area about 19.60% populations belong to Scheduled Castes (SC) and only 1.48% Scheduled Tribes (ST). Sex Ratio of the study area is 954 females per thousand males, which is observed to be higher than State Maharashtra (929). Child Sex Ratio of the study area observed 910. Out of total population of the study area literate population is 76811 in which male literate population is 44544 while female literate population is 32267. It is observed that literacy rate of the study area is 65%. out of the total population, around 43.11% are working population. Main workers are 39.56% marginal workers are 3.55%, while 56.89% are non-workers. It is understood that 43.11 % is Workforce Participation Ratio (WPR) of the study area.

6.0 Environment Impact and Its Mitigation Measures

6.1 Air Environment

- The source of dust emissions is loading/unloading, transportation and storage of raw material& finished product.
- Gaseous pollutants (SO2, NOx and CO) are also anticipated from stack emissions and vehicular emissions.
- A major source of air pollution is the bagasse-fired boilers. Industry provided 81m common stack with ESP to existing 80 TPH & 14 TPH Boilers. The industry plans to install boiler with a capacity of 110 TPH with stack height 80 m with ESP. ESPs will be used to control emissions, ensuring PM levels stay below 50 mg/Nm3.
- Online Continuous Monitoring system will be installed and connects to Pollution control board as per CPCB guidelines.
- Use of good quality fuel and lubricants will be promoted. Moreover, low sulphur content diesel shall be used as fuel for DG sets to control emission of SO2.
- Water sprinkling shall be carried out to suppress fugitive dust during earthworks and along unpaved sections of access roads.

6.2 Land Environment

- The project site of 2935858 Sq.m area is identified for Sugar Cogeneration & distillery unit. The main sources which will affect the land environment are by products from proposed activity i.e. ash, ETP effluent & sludge etc.
- After completion of the construction phase, the surplus earth shall be utilized to fill up the low-lying areas, the rubble shall be cleared and all un-built surfaces will be reinstated;
- There shall be minimum concreting of the top surfaces so that there is a scope for maximum groundwater recharge due to rainfall; and Plantation outside the plant premises, in the nearby villages shall be encouraged by supplying free saplings to the villagers.
- Usage of appropriate monitoring and control facilities for construction equipment's deployed.
- All hazardous waste shall be securely stored, under a shed for eventual transportation and disposal to the authorized dealers.

- The solid waste generation due to workers working at site will be segregated and will be transported and disposed to waste disposal facility.
- Chemicals/Paints etc. used during construction phase will be stored safely.

6.3 Noise Environment

- The major sources of noise during the construction phase are vehicles and construction equipment like dozers, scrapers, concrete mixers, cranes, pumps, compressors, pneumatic tools, saws, vibrators etc
- The noise control measures during the construction phase include provision of caps on the construction equipment and regular maintenance of the equipment.
- Equipment's will be maintained appropriately to keep the noise level within 85 dB (A).
- Wherever possible, equipment will be provided with silencers and mufflers.
- High noise producing construction activities will be restricted to day time only. Greenbelt development will be undertaken from the construction stage itself. Further, workers deployed.
- Pumps – Enclosure in acoustic screen, allowing for engine cooling and exhaust, use of anti-vibration mounting, flexible couplings of hoses, maintaining adequate inlet pressure.
- Provision of Intake mufflers, unidirectional fan for Cooling and enclosures for electrical motors.
- Provision of barricades along the periphery of the site.
- All contractors and subcontractors involved in the construction phase shall comply with the CPCB noise standards.
- Activities that take place near sensitive receptors to be carefully planned (restricted to daytime, taking into account weather conditions etc.)
- In case of steady noise levels above 80-85 dB (A), initiation of hearing conservation measures.
- In high noise areas will be provided with necessary protective devices such as ear plug, ear-muffs etc.
- Overall, the impact of increase in noise on the environment would be insignificant, as it will be localized and mainly confined to the day hours.

6.4 Water Environment:

Existing effluent generation consented quantity from sugar plant 280 CMD & Domestic effluent is 70 CMD

Effluent generation after expansion

- Process effluent generated under expansion - 647 CMD
- Total effluent generated after expansion- 927 CMD
- Existing effluent Treatment plant capacity is 500 CMD. After expansion ETP plant capacity will be upgraded to 1000 CMD.
- Industry will be installed 2500 CMD capacity CPU for the excess condensate and treated condensate will be used for the process in Sugar.

6.5 Impact of Solid Waste

Sr.No.	Type of Waste	Existing Quantity in MT/M	Expansion Quantity in MT/M	Total Quantity After expansion MT/M	Mode of Disposal
1.	**ETP sludge**	2	3.7	5.7	Used as manure
2.	**Fly ash**	33.60	62.4	96	Sale to authorized Brick Manufacturer
3.	**Used Oil (Lit/Day)**	3.5	6.5	10	Sprayed on bagasse & used as fuel in boiler
4.	**CPU Sludge**	-	2.0	2.0	Used as manure

6.6 Greenbelt Development

Total land: 29.37 Ha. Existing Greenbelt area is 2.31 Ha., which is 7.8 % of total plot area. In addition, proposed greenbelt area is 7.38 Ha. Total greenbelt area after expansion will be 9.70 Ha which will be 33% of Total Plot Area. As per requirement per ha plants @ 2500. Industry planted 5000 plants; balance 20000 Nos of plants will be planted.

6.7 Socio Economic Environment

- Increase in employment opportunities so as people will not migrate outside for employment.
- Increase in literacy rate.
- Growth in service sectors
- Improvement in prices of indigenous produce and services benefiting local people such as increase in land value, house rent rates and labour wages.

- Improvement in socio-cultural environment of the area.
- Improvement in transport, communication, health and educational services.
- Increase in employment due to increased business, trade, commerce and service sector.
- Thus the overall impact on the socio economic environment of the region is expected to be beneficial for the local population.

7.0 Environment Monitoring

Based on the baseline data collected on various environmental parameters in the study area and the prediction and assessment of impacts due to the proposed project, a comprehensive Environmental Monitoring Program is required to be developed, to satisfy the various statutory requirements for discharges and emissions and also to identify the trend of various environmental parameters.

Environmental monitoring program covers various areas like –

- Ambient air quality
- Water quantity and quality
- Effluent quality
- Noise
- Soil characteristics
- Ecology
- Hazardous waste management
- Safety/Health checkup.

7.0 Corporate Environment Responsibility (CER)

As an additional part of the EMP cost, the proponent proposes to invest 2.80Cr (0.75% of the project cost of 373.59 Cr) before commencement of the project, to be considered for implementing the activities in the context of the local scenario of the area.

8.0 Cost for Environment Management Plan

M/s. Baliraja Sakhar Karkhana Limited has proposed a capital investment of Rs.1625.00 lakh and a recurring cost of Rs 60.7 lakh per annum for environmental protection measures.

Sr. No.	Environment Aspect	Capital Cost (in Lacs)	Recurring Cost (in Lacs)
1	Air Pollution Control		
	Stack and ESP for 110 TPH boiler	250.00	15.0

2	Condensate Polishing Unit and ETP upgradation		
	CPU (2500 CMD)	750.00	10.0
	ETP (500 to 1000 CMD)	450.00	10.0
3	Green Belt Development	50.00	5.0
4	Rain Water Harvesting	40.00	2.0
5	Environment Monitoring (Online Monitoring System) carbon and water foot print	30.00	3.70
6	Solid Waste Management	30.00	10.0
7	Occupational Health	25.00	5.0
Total		**1625.00**	**60.7**