

# **EXECUTIVE SUMMARY**

## **Environment Impact Assessment Report**

Establishment of New 30 MW Co-generation  
Plant At

Rannanagar, Timmapur – 587122

Mudhol taluka, Bagalkot district

Karnataka

**Prepared For**

**M/S Ryatar Sahakari Sakkare Karkhane Niyamit**

**(RSSKN),**

**Rannanagar, Timmapur,**

**Mudhol Taluka, Bagalkot District**

**Karnataka**



## EXECUTIVE SUMMARY

### Introduction

M/s Ryatar Sahakari Sakkare Karkhane Niyamit, (RSSKN) was registered vide registration no. DSK/REG/82-83 dated 29-07-1982 under Karnataka Co-operative Society Act, 1959. As per provisions of Karnataka State Co-operative Societies Act and bye Laws of the society, the Board of Directors are elected from members for a period of 5 years. Managing Director is appointed by the Government of Karnataka and is a senior ranking official with requisite administrative acumen.

Existing 5000TCD Sugar Unit has granted Environmental Clearance from State Level Environment Impact Assessment Authority (SEIAA) Karnataka on 3<sup>rd</sup> October 2013

### Scope of the Study

The EIA studies were carried out for various environmental components so as to assess the anticipated adverse impacts due to the proposed facilities and to suggest suitable mitigation measures. Project was appraised in 127th State Level Expert Appraisal Committee (SEAC) held on 19th, 20th & 21st January 2015 (Item No. 127.11). The project was considered as category-B1, after detailed discussion the committee decided to approve TOR, for preparation of EIA EMP report.

ToR letter no. SEIAA 15 IND 2014 dated 11.02.2015

### Project Location

M/s Ryatar Sahakari Sakkare Karkhane Niyamit (RSSKN) RSSKN had proposed to establish new 30 MW Co-generation power plant at Rannanagar, Timmapur – 587122, Tq. – Mudhol, Dist.- Bagalkot, Karnataka

Site is situated at Latitude 16° 12' 54.05" N Longitude: 75° 20' 35.77"E MSL 724 Meter

## Salient Features of the Project & Cost

**Table No.1.1 Brief Description of the Proposed Project**

Sr. No.	Features	Description
1.	Total Land Area	200 Acre
2.	Present Infrastructure	29.64 Acre
3.	Proposed cogen plant	8 Acre
4.	Green Belt Area	67Acre
5.	Open Space	95.36 Acre
6.	Project Configuration	Sugar Unit : 5000 TCD (Existing) Cogen Power: 11 MW (Existing) Cogen Power: 30 MW (Proposed)
7.	Operational Days	Cogen Power : 280 Days (Season + Off Season) Season : 155 Days Off Season : 125 Days (67 days bagasse + 58 days coal & biomass)
8.	Power Evacuation Line	Jambgi substation (110 kV) of KSETCL 6 KM.
9.	Capital Cost	Cogen Power: Rs. 161.91 Cr
10.	Budgetary cost for Environmental protection	Rs. 8.03 Crore

## Details of Raw Material/Product/By-Product

Sr. No	Unit	Raw Material (MT)	Product	Byproduct / Waste byproduct (TPA)
1	Cogen Power	<u>Season</u> Bagasse: 271948 <u>Off-Season:</u> Bagasse : 77919 Biomass: 10000 Imported coal :17934	Season: 30 MW Off- Season :29 MW	Bagasse ash : 3881 Mixed fuel ash : 4659

## Land requirement

Land utilization is as under

- ❖ Total Land Area : 200 Acre
- ❖ Present Infrastructure : 29.64 Acre

- ❖ Proposed cogen plant : 8 Acre
- ❖ Green Belt Area : 67Acre
- ❖ Open Space : 95.36 Acre

### Fuel requirement

- ❖ Season Bagasse : 271948
- ❖ Off-Season: Bagasse : 77919
- ❖ Biomass : 10000
- ❖ Imported coal :17934

### Water requirement

- ❖ Season : 3000 M<sup>3</sup>/Day
- ❖ Off-Season: : 3600 M<sup>3</sup>/Day
- ❖ Source : Ghataprabha River

**Source:** RSSKN has taken permission from Govt. of Karnataka for drawing 52.53 MCFT of water from Ghataprabha River

### Power Scheme

Period	Generation	Consumption	Export
Season	30 MW	9.85 MW	20.15 MW
Off-Season	29 MW	2.95 MW	26.05 MW

The project will also install a 1000 kVa DG set for emergency operations

### Description of the Environment

The baseline status of environmental quality

**Study Period:** The studies were conducted during March 2016 to May 2016

**Study Area:** The study area for monitoring of environmental quality includes 10 km region around the project site. Site area covers the 10 KM radial study area in Survey of India (SOI) Toposheet Nos. 47P/7, 47 P/8.

### Environmental Setting (10 km radius)

Particulars	Details	Aerial Distance
Site Location & Address	M/S Ryatar Sahakari Sakkare Karkhane Niyamit (RSSKN) Rannanagar, Timmapur- 587122, Tq.- Mudhol, Dist. Bagalkot, Karnataka Latitude 16°21'54.05"N & Longitude 75°20'35.77"E	
Nearest Habitation	Timmapur (NE) Hebbal (E) Pitur (NW)	1.0 KM 1.5 KM 2.5 KM
Water Body	Ghataprabha River (NE)	2.0 KM
Nearest Road (Mudhol –Lokapur)	SH-34	600 Meter
Nearest Town	Mudhol	15 km
Nearest Railway Station	Bagalkot	42 KM
District Headquarter	Bagalkot	42 Kms
Nearest Airport	Belgaum	82 Km
Nearest IMD Observatory	Bagalkot	42 KM
Rainfall	Average 579 mm	
Relative Humidity	20-80%	
No. of villages in the study area	27	
Total Population	65904 (HH nos. 13101)	
Religious Place	None	
Archeological monuments	None	
Reserved Forest / Ecological Sensitive area	No Ecological Sensitive area present	However, patches of reserve forests are present
Seismic Zone	II	-

### Monthly Metrological Data during Study Period

Sr. No.	Particulars	Details	
1	Monitoring Period	March 2016 –May 2016	
2	Temperature(°C)	Min	March : 33.7
			April : 38.3
		Max	May : 39.4
			March : 42.6
		April : 44.7	

		May : 44.8
3	Avg. Wind Speed (Km/h)	March : 1.8
		April : 3.2
		May : 3.8
4	Wind Direction	March : N
		April : NW
		May : NW
5	Relative Humidity (%)	March : 65
		April : 62
		May : 68
6	Rainfall	None

### Air Environment:

Ambient air quality of the study area has been assessed during March 2016 –May 2016 through a network of nine ambient air quality stations within an area of 10 km region around the project site.

The concentrations of PM<sub>10</sub> PM<sub>2.5</sub>, SO<sub>2</sub> and NO<sub>x</sub> were found within the National Ambient Air Quality Standards (NAAQ).

### Noise Environment:

The minimum noise level 49.1 dB (A) and the maximum noise level 68.3 dB (A) were observed in day time. The relative high values of noise recorded in factory premises and suburban areas were primarily due to vehicular traffic and other activities.

### Water Environment

The water samples were collected from bore well, dug well and river in project area.

- ❖ pH of the water sample ranges from 6.98 to 7.72.
- ❖ The total suspended solids shows the values in between 8 to 21 mg/lit.
- ❖ Total Dissolved Solids ranges from 518 to 1800 mg/lit for both ground and surface water sample

- ❖ Hardness of the ground water is high as compared to the surface water. Hardness of the surface water is 500 to 600 mg/lit whereas ground water shows these values in between 240 to 760 mg/lit.
- ❖ Chloride concentration of the ground water is 126.9 to 354.8 mg/lit.
- ❖ Nitrate concentrate is to less i.e. 0.004 to 0.13 mg/lit in ground water while surface water shows its concentration 0.025 to 0.045 mg/lit
- ❖ Heavy metals like Cadmium, Chromium, Lead, Zinc, Copper Manganese, Residual Chlorine, Free Ammonia, Mercury, Selenium, Silver, Arsenic, Barium, Cyanide, Nickel, Phenolic Compounds etc. are not detected in all ground and surface water samples.

This is concluding that the surface and ground water in the study area is not polluted by any source during the study period.

### **Soil Environment**

- ❖ pH of soil samples in range of 7.20 to 7.68.
- ❖ Conductivity of the samples is in between 35 to 56  $\mu$ mho/cm.
- ❖ The water holding capacity of a soil is a very important agronomic characteristic. It is between 38.8% to 42.4% during the study period
- ❖ The Total Nitrogen, Phosphorous & Potassium found in the range of 165 to 186 kg/ha, 14.5 to 28.2 kg/ha and 225 to 242 kg/ha respectively

### **Socio Economic Environment:**

Population of the Study area is 65904 living in 13101 Households. The population comprises of 32925 Male (49.96%) and 32979 Female (50.04%).

16.67% of the populations belong to scheduled castes (SC) and 6.93% to scheduled tribes (ST) respectively.

Literacy rate of the study are is 54.96 % and illiterate rate is 45.04 %.

The occupational pattern of area shows that the percentage of main + marginal and non-workers are 37 % and 63 % respectively. The main workers comprise majority of agricultural labour (20 %) followed by other workers (10 %) and household labours (1 %). Marginal workers are 6 %.

### **Ecology and Biodiversity:**

The vegetation of the area is deciduous type along with open scrub land. As per the ecological studies conducted it can be seen that the study area shows extreme species diversity. Total 62 floral species recorded & no RET floral species is reported in the study area.

Six species of Mammals, 6 species of Amphibian 6, Reptiles 6 and 50 species of birds were recorded in and around the periphery of the project during the study period.

### **Land Use Land Cover**

#### **Land Use Land Cover Statistics of the Study Area**

<b>Class</b>	<b>Area in Sq.Km</b>	<b>Area in %</b>
Built-up Land	56.07	17.8
Fallow Land	41.64	13.3
Harvested Land	52.91	16.8
Open Scrub Land	59.46	18.9
Vegetation	102.17	32.5
Water	1.90	0.6
Total Area	314.14	100.00

### **Anticipated Environmental Impacts & Mitigation Measure**

Prediction of impacts depends on the nature and size of activity being undertaken and also on the type of pollution control measures that are envisaged as part of the project proposal. However, the good management practices would be followed to ensure that the environmental pollutants concentrations remain within the limits. The proposed plant may cause impact on the surrounding environment in two phases.

- ❖ During construction phase
- ❖ During Operation phase



Mitigations of these likely impacts are described in the following sub-sections.

### **Impact on Air Quality and Management**

Increase in PM<sub>10</sub>, SO<sub>2</sub>, NO<sub>x</sub>, levels due to construction activities and movement of vehicles. The dust generated will be fugitive in nature, which can be controlled by sprinkling of water. The impacts will be localized in nature and the areas outside the project boundary are not likely to have any major adverse impact with respect to ambient air quality.

Air pollution generating sources at proposed plant will be due emissions on account of operation of bagasse boilers. The main air pollutants to be generated during bagasse operation from the proposed activity are mainly particulate matter (PM), Sulphur dioxide (SO<sub>2</sub>) and Oxides of Nitrogen. Electrostatic Precipitators (ESP) & bag filters having high operational efficiency shall be provided for the boilers.

### **Impact on Noise Levels and Management**

The impact of noise due to construction activities are insignificant, reversible and localized in nature and mainly confined to the day hours.

All rotating items shall be well lubricated and provided with enclosures as far as possible to reduce noise transmission. In general, noise generating items such as generators, fans, blowers, compressors, pumps, motors etc. are so specified as to limit their speeds and reduce noise levels. Operators will be provided with necessary safety and protection equipment such as ear plugs, ear muffs etc.

### **Impact on Water Quality & Management**

Effluent water sources are boiler & Cooling Tower; blow down, washings, service water, etc. Effluent generation will be maximum 466 m<sup>3</sup>/day in season & 531m<sup>3</sup>/day in off season. However, existing effluent generation is 294 m<sup>3</sup>/day. The same will be neutralized and settled in a neutralizing pit. Any balance will be pumped to the sugar mill ETP.

In event of excess effluent the same will be pumped to the ETP of the sugar mill which will utilize the same as per prevailing and approved practices.

The treated water will be utilized for ash quenching and gardening of the green belt.

Sewage from various buildings in the Cogen Project area will be conveyed through separate drains to the proposed STP.

### **Solid Waste**

Bagasse ash: 3881TPA

Mixed fuel ash: 4659 TPA

During operation phase ash will be generated, the same will be Sell to brick and cement manufacturing unit

ETP Sludge Used for land filling & fertilizer for gardening in own factory premises

### **Biological Environment**

Most of the impact of the proposed project on biodiversity is secondary effects from environmental pollution, such as discharge of effluent into water body. Soil can be negatively affected by poorly managed application of wastes (by- products) from sugar processing. However, waste can be used a beneficial soil amendments, if properly applied. The air emissions from chimney & vehicular pollution will affect the vegetation.

### **Social Aspects**

- ❖ Increase in floating population.
- ❖ Economic upliftment of the area.
- ❖ Benefits due to the civil construction and transportation companies to the local people
- ❖ The local population will have employment opportunities due to the proposed project.
- ❖ The local people will be preferred as laborious during the construction phase

- ❖ Local people shall be given preference for employment depending on their qualification
- ❖ All the applicable guidelines under the relevant Acts and Rules related to labour welfare and safety shall be implemented during the construction phase;
- ❖ The contractor shall be advised to provide fire wood/kerosene/LPG to the workers to prevent cutting of nearby trees

### **Environmental Monitoring Programme**

The environment, safety and health-monitoring programme in the factory shall be implemented as follows:

- ❖ Regular monitoring of stack emissions
- ❖ Daily monitoring of water and wastewater
- ❖ Quality monitoring of ambient air, noise and work place air
- ❖ Monitoring of occupational safety

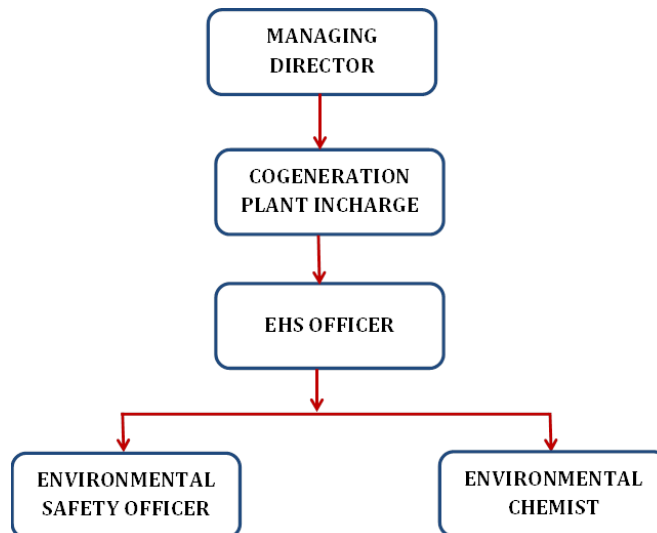
The project management, being aware and conscious of its responsibilities to environment, is committed that the project operations will be made keeping in line with the internationally accepted sustainable measures/practices and methods thus leaving negligible adverse impacts on any segment of environment due to proposed activity.

### **Environmental Management Plan**

The management of the M/s. RSSKN will take all the necessary steps to control and mitigate the environmental pollution in the designing stage of the project. While implementing the project M/s. RSSKN will follow guidelines specified by CPCB under the Corporate Responsibility for Environmental Protection (CREP) for power plants. The EMP task will likely be administered by the “Health, Safety and Environment (HSE) Department”, who will have the authority where necessary to “stop the job” if an environmentally detrimental activity is being conducted.

The EMP operation/implementation will be the responsibility of the “HSE Officer”, who will be coordinating, arranging the collection and reporting of the results of all emissions, ambient air quality, noise and water quality monitoring.

Environmental Management Cell will be established, which will be supervised and controlled by an independent Plant Manager supported by a team of technically qualified personnel apart from other operating staff



### **Environmental Management during Construction Phase**

The construction activities of the proposed unit will increase in dust concentrations and fugitive emission due to vehicles movement. Frequent water sprinkling in the vicinity of the construction sites will be undertaken. The following control measures are recommended to mitigate the probable adverse impacts:

- ❖ During construction phase M/s RSSKN will be taken care to provide all necessary facilities to construction workers such as water supply, sanitary facilities, temporary housing, sewage treatment facilities, drainage facilities etc.
- ❖ Vehicles transporting loose construction material (clay, sand etc.) to be covered with tarpaulins.
- ❖ During construction periods with abnormal wind speeds, in particular during dry weather conditions, workers on the construction site should be provided with adequate inhalation and eyes protection gears. In case particulates in air

hamper a clear view over the site completely, so that safety is impaired, the construction should be interrupted until weather conditions improve.

- ❖ Necessary care will be taken as per the safety norms for the storage of the petroleum products (Diesel, Petrol, Kerosene etc).
- ❖ It will be ensured that both gasoline and diesel powered vehicles are properly maintained to comply with the exhaust emission standards.
- ❖ Contractor will supervise the safe working of their employees.
- ❖ Barricades and fences are provided around the construction area personnel protective equipment's e.g. safety helmet, goggles, gumshoes, etc. will be provided to the workers.
- ❖ Accidental spill of oils from construction equipment and storage sites will be prevented.
- ❖ Though the effect of noise on the nearby inhabitants due to construction activity will be negligible, noise prone activities will be restricted to the day time.
- ❖ As soon as construction is over, surplus of excavated material will be utilized to fill up low lying areas and all surfaces will be reinstated.
- ❖ Routing and scheduling construction trucks to reduce delays to traffic during peak travel times would reduce secondary air quality impacts caused by a reduction in traffic speeds while waiting for construction trucks
- ❖ M/s RSSKN will give preference to local eligible people through both direct and indirect employment.
- ❖ Tree plantation will be undertaken during the construction phase for strengthen the existing green belt so that air pollution will be nullify in operation phase of the project.

## Environmental Management during Construction Phase

### Air Environment

The major pollutants from existing & proposed activity are PM<sub>10</sub> & PM<sub>2.5</sub> Sulphur Dioxide and Oxides of Nitrogen.

**Stack Emissions:** The following measures will be adopted for the control of emissions from the stacks of the proposed unit.

- ❖ The height of the stack will be 85 m for proposed 160 TPH boiler with single chimney as per CPCB Norms.
- ❖ Suitably designed ESP with efficiency of 99.9 % will be placed downstream of the stack which will separate out the incoming dust in flue gas so as to maintain the emissions PM<sub>10</sub> & PM<sub>2.5</sub> (50 mg/Nm<sup>3</sup>) at the outlet of the stack.
- ❖ Stack emissions will be regularly monitored by M/s. RSSKN/external agencies on periodic basis to check the efficiency of air polluting control devices and necessary action.

### Noise Environment

- ❖ All rotating items will be well lubricated and provided with enclosures as far as possible to reduce noise transmission. Vibration isolators will be provided to reduce vibration and noise wherever possible
- ❖ Manufacturers and suppliers of machine/equipment like compressors, STG turbines and generators will be manufactured as per OHSAS/MoEF guidelines.
- ❖ The personnel safety such as ear muffs, ear plugs and industrial helmets will also act as a noise reducers

### Water Environment

- ❖ Blow down water from Boiler will be sent to ETP after cooling to ambient temperature.

- ❖ ETP plant will be provided with surface aeration, and other facilities to treat both sugar plant and cogen plant effluent to the standards prescribed by the State Pollution Control Board.
- ❖ The treated effluent will be used for irrigation in own farms.
- ❖ Overflow from Ash Handling System is stored in a settling tank, which is treated with alum and lime and the overflow of this water is used for ash handling systems or gardening within the factory area

### **Ecology and Biodiversity:**

Following activities needs to be paid attention to:

- ❖ Construction activities needs to be restricted to day hours only and the movements of workers and vehicles should be completely banned during early morning and late evening when wildlife activities are at peak.
- ❖ Strict instructions to the workers and contactors need to be given on ban on hunting of any faunal species and cutting of vegetation.
- ❖ The native/local species should be used for strengthening green belt.
- ❖ Introduction of exotic plant species should be strictly avoided.
- ❖ In addition, do the awareness program among the school children & local community about the ecology & biodiversity.

### **Fuel & Ash Handling System :**

Bagasse handling system will be provided from existing bagasse elevator to the slat conveyor of proposed boiler. Return bagasse will be interconnected to the existing return bagasse carrier. The system will be designed for 110 TPH and will include all required auxiliaries, controls and safety requirements. Required bale breakers and biomass preparation equipment are included. Coal sizing equipment and conveying system to proposed boiler with capacity of 50 TPH is included.

Mechanical submerged ash handling system designed for bagasse and coal to convey the ash from the bed, economizer, APH and ESP hoppers to ash silo is provided

**Green Belt Development Plan :** Creation of green belt development using local species along the approach road, inside campus, open space, near ETP Plant etc. will helpful for the aesthetic development of the area with sound ecological management. Area allotted for green belt is 67Acre.

### **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 shall be conducted for each worker.

- ❖ Lung Function Test
- ❖ Radiology – X-ray
- ❖ Pulmonary Function Test
- ❖ Audiometric Test
- ❖ General clinical examination with emphasis on respiratory system
- ❖ Pre-employment examinations

### **Fire Fighting**

The different types of fire protection / detection system envisaged for the entire project are given below.

- ❖ Hydrant System for entire area of power plant.
- ❖ High Velocity Water Spray System (HVWS) for Generator Transformer (GT), Unit Auxiliary transformer (UAT), Station Transformer (ST), and turbine lube oil canal pipe lines in main plant, Boiler burner front, diesel oil tank of DG set, main lube oil tank, clean and dirty lube oil tanks.



- ❖ Medium Velocity Water spray system – Cable gallery / Cable spreader room, bagasse conveyors, Transfer points and F.O. pumping station and F.O. tanks.
- ❖ Foam system for Fuel oil tanks.
- ❖ Portable and mobile fire extinguishers for entire plant.
- ❖ Fire tenders (minimum 2 nos.).
- ❖ Inert Gas System for Central Control Room, Control Equipment Room, Computer Room and UPS Room in the TG building.
- ❖ **Fixed Foam System:** This system is provided for LDO and HFO storage tanks. The water for the foam system will be tapped from the Hydrant system.
- ❖ **Inert gas system:** Inert gas system will automatically detect and suppress fire within a protected area. The system will be a total flooding fire suppression system with automatic detection and/or manual release capability. Complete system design will be in accordance with NFPA. The inert gas system will be generally provided above false and below false ceiling of Central Control room, UPS Room, Control equipment room and Computer room.

## Budgetary Provision for Environmental management plan

### During Construction Phase

Sr. No	Name of Activity	Cost in INR , Lakhs
1	Sanitation	2.00
2	Monitoring	2.00
3	Occupational Health & Safety	4.00
<b>Total</b>		<b>8.00</b>

### During Operational Phase

No.	Particulars	Cost in INR, Lakhs
<b>One Time Installation Cost (Capital Cost)</b>		
1	Air Pollution Control System (ESP, Stack)	350
2	Noise Control Systems	10
3	Green Belt Development	20
4	Environmental Lab	10
5	Water Pollution Control System – ETP	20

6	Ash Evacuation system	02
7	Occupational Health & Safety	05
	<b>Total</b>	417
<b>Recurring Cost</b>		
1	Environmental Monitoring /APH Maintenance	50
2	General Maintenance of ETP	15
3	Greenbelt maintenance	02
4	Noise Pollution Control	02
5	Occupational Health & Safety	02
6	Social Corporate Responsibility	40
	<b>Total</b>	111