Executive Summary

of

Environmental Impact Assessment

For

Proposed 19.5 MW Cogeneration Power Plant

Prepared for

M/s Swaraj India Agro Ltd. (SIAL)

At Village – Upalve, Tal – Phaltan, Dist. Satara

Prepared By

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Accredited by QCI, Govt. of India

EXECUTIVE SUMMARY

1. Introduction

This EIA report has been prepared for 19.5 MW co-generation project by Swaraj India Agro Ltd. (SIAL). SIAL proposed sugar unit of 4400 TCD Gut No.332/B/2 At Village – Upalve, Tal – Phaltan, Dist. Satara Maharashtra.

Swaraj India Agro Limited. (SIAL) is a Company registered in the State of Maharashtra under the Companies Act, 1956 having certificate of incorporation no. U01409PN2010PLC137013 of 13th July, 2010.

Swaraj India Agro Limited. (SIAL), a public limited company, proposes to set up an integrated eco-friendly 19.50 MW capacity cogen power project for decentralized generation of exportable surplus power, mainly from renewable sources of fuel. The project is proposed to be set up co-extensively with a new sugar mill of 4400 TCD capacity, located at A/p Upalve, Tal. Phaltan, Dist. Satara, Maharashtra State.

The State of Maharashtra is poised for rapid industrial development and large-scale use of electricity for industrial purposes, for which the demand for electrical power is continuously increasing. The present demand for electrical power is greatly in excess of the generating capacity. The power generation scenario in the state reveals that the demand for power would continue to out-strip the available and planned generation capacity

The Seventeenth Electric Power Survey of India (draft) published by the Central Electricity Authority (CEA) projects an increase in the peak demand in Maharashtra from 19,388 MW in 2009-2010 to 21954 MW in 2011-2012. The energy demand is expected to increase from 124,961 MU in 2009-2010 to about 125,661 MU in 2011-2012. Thus there is a deficit of 3632 MW. The peak power demand will be of 28348 MW and availability of energy 25124 MW in the year 2016-2017. Demand is expected to reach 219.9 BW by 2018. Deficit in peak demand is expected to increase substantially and there would be deficit in energy availability due to industrial growth in the subsequent years. In order to reduce power deficiency in Maharashtra SIAL trying to contribute by proposing 19.5 MW Bagasse Based Cogen Power Plant.

2. Fuel Alternatives

Fossil energy resources consist primarily of natural gas and furnace oil. Domestic oil supply is considered negligible and natural gas resources are becoming scarce in India. Moreover, domestic coal is very high in sulphur and ash content, which will lead to severe environmental hazards. The project's proposal for using renewable energy source i.e. bagasse, is the best option for environmental and economic reasons.

3. Growth Of Bagasse Cogen Power

India is blessed with an abundance of non-depleting and environment friendly renewable energy resources such as solar, wind, biomass and hydropower. Recognizing this potential, the Indian government has accorded a high priority to exploring and harnessing the potential. Over the years, the Ministry for New and Renewable Energy (MNRE) has been facilitating the implementation of broad spectrum programs. The progress since the turn of the century has been particularly marked with the total grid interactive renewable power generation capacity reaching more than 14,000 MW by March 2009 vis-à-vis a paltry 1,628 MW in 2001-02. Presently, renewable energy accounts for over 9 percent of the total installed capacity as compared to 1.5 percent in 2001-02.

4. Scope of the Study

MITCON Consultancy & Engineering Services Ltd., Pune has been entrusted the task of carrying out EIA/EMP studies in order to obtain regulatory clearances. 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. As per the EIA notification dated 14th September 2006 of the Ministry of Environment & Forests (MoEF), New Delhi EIA report is prepared.

5. Project Location

The proposed project located at Gut No.332/B/2 At Village – Upalve, Tal – Phaltan, Dist. Satara Maharashtra. Site comes under Grampanchyat- Upalve Jurisdiction. It is just 15 km far away from Phaltan. The site is approachable by NH-13 Pune –Phaltan Road. Pune is 125 KM away and Satara is 44 KM away.

6. The Salient Features Of Project Site

The salient features of the project site are presented in detail below

Salient Features of Project Site

Project Configuration	Proposed 19.5 MW co-generation power project
Source of Raw material	Sugarcane : Nearby villages / command area Bagasse : From Sugar Factory (SIAL)
Availability of water	SIAL has permission to withdraw water from the Banganga Dam at around 5.0 Km from site
Plant Location	At Village – Upalve, Tal – Phaltan, Dist. Satara Maharashtra. Latitude: 17°50'4.82"N Longitude: 74°23'10.98"E
Nearest Major City	Phaltan at distance of 17 KM, Satara 44 KM
Nearby villages and towns	Upalve (N), Veloshi (W), Kalaskarwadi (S)
Seismic Zone	III
Access to site by Road	SH-146 Pusegaon - Phaltan 7.5 km away
Access to site by Rail	Phaltan Railway station 17 KM
Access by Air	Pune Airport -93 Km
Meteorological data	Temperature: Maximum : 41.8^{0}C in May Minimum : 23.7^{0}C in March (Source: IMD Pune 1951-1980)
Relative humidity	30 to 34%
Rainfall	650 mm (Average rainfall of Pune district)
Religious/ Historical Place	N.A.
Power Evacuation Line	MSETCL Line – 15 Km away Phaltan Substation – 15 Km
Archeological monuments within 10Km	None
Reserved Forest	None

7. The Salient Features of Proposed co-generation Project By SIAL

Boiler capacity, TPH	:	1 x 110
Pressure, kg/cm^2	:	87
Temperature, °C	:	525
Turbine capacity, MW	:	19.50
Turbine type	:	Double Extraction cum condensing Type
Season operation, days	:	160
Off Season operation days		55
Fuels used for season operation	:	Bagasse
Fuels used for off season operation		Saved Bagasse
On bagasse / bio-mass / cane trash	:	70.00, ±2
Cooling System	:	Air cooled
Feed water temperature, °C	:	160
Captive power consumption, % of generation	:	9.00
Turbo-generator efficiency, %	:	96.00
Utilization level, %	:	80 in 1st year, 85 in 2nd year & 90 in 3rd year and onward

8. Project Description

8.1. Project Implementation

The most essential aspect regarding the implementation of the proposed project is to ensure the project completion within the schedule, spanning for 14-15 months from the date of Notice to Proceed (NTP). Financial closure is expected to be in place after the approvals and clearances are obtained.

8.2. Land Requirement

The land breakup details are as follows:

Plot Area	63 Acre
Industrial Activity Area	33 Acre
Green Belt Area	18 Acre

8.3. Process Details

Raw Material Requirement (Fuel + Water)

The main raw material for proposed activity bagasse & water.

Material Balance (Co-generation Power):

Sr. No	***Requirement***		***Balance***			
	Material	***Source***	***Input***		***Output***	
					Product	***Waste***
1.	Bagasse	Sugar Factory (SIAL)	Season	Bagasse (160 Days) :162355 MT	19.5 MW Power generation	3247MT (Ash)
			off-Season	Bagasse: 42927 MT (55 operation days)		858 MT (Ash)
2.	Water	Banganga Dam	509 M^3/Day		Steam Generation	78 M^3/Day

8.4. Water Requirement

The plant raw water requirement for the proposed activity will be sourced from Banganga Dam. It is nearest of all as compared to other water sources. The water requirement will be 509 m^3/day.

9. Description of the Environment

The baseline status of environmental quality in the vicinity of project expansion site serves as a basis for identification and prediction of impact. The data were collected from both primary and secondary sources. Primary source data were collected through environmental monitoring in the study area. Primary survey involved climate, hydro geological aspects, atmospheric conditions, water quality, soil quality, vegetation pattern, ecology, socio-economic profile and land use of the study area.

The environmental influence due to the project is likely to be restricted to 10 km region around the factory site. Therefore, the study area for monitoring of environmental quality includes 10 km region around the project site. Proposed site area covers the 10 KM radial study area in SOI Toposheet no E43 O/5. The study area is located in Village – Upalve, Tal – Phaltan, Dist. Satara Maharashtra. The studies were conducted during the post-monsoon period of the March 2014- May 2014.

9.1. Site Specific Meteorology

Wind speed, wind direction, temperature and relative humidity were recorded on hourly basis continuously for three months from 1.03.2014 to 31.05.2014.

Table: Monthly Metrological Data during Study Period

Sr. No.	Particulars		Details
1	Monitoring Period		March 2014 –May 2014
2	Temperature(^{0}C)	Min	March : 23.7
			April : 24.1
			May: 23.9
		Max	March: 39.6
			April : 41.4
			May : 41.8
3	Avg. Wind Speed (m/s)		March : 1.2
			April : 1.2
			May : 1.4
4	Wind Direction		March : NW followed by W
			April : W
			May : W followed by NWW
5	Relative Humidity (%)		March : Avg.- 30 %
			April : Avg.- 33 %
			May : Avg. – 34%
6	Rainfall		None

9.2. Air Environment

Ambient air quality of the study area has been assessed during winter period of 1stMarch2014 to 31stMay2014, through a network of six ambient air quality stations within an area of 10 km region around the project site.

Particulate matter emission (PM_{10}& $PM_{2.5}$): After completion of baseline survey it was found that all ambient air quality parameters are within the NAAQ standards of Central Pollution Control Board. At Uplave site it was found that high percentage of Particulate matter as compared to other monitoring locations due emission of particulate matter from transportation and local habitant activity.

SO_2emission:SO_2 emission is found at Uplave due to transportation.

NOx emission: NOx emission at all monitoring location are within the NAAQ standards. At Uplave it was found that high percentage of NOx as compared to other monitoring. Nitrogen dioxide is a large scale pollutant, with rural background ground level concentrations in some extent. Nitrogen dioxide plays a role in atmospheric chemistry, including the formation of troposphere ozone. Nitrogen dioxide is also produced naturally during electrical storms.

The term for this process is "atmospheric fixation of nitrogen". The rain produced during such storms is especially good for the garden as it contains trace amounts of fertilize

9.3. Noise Environment

The minimum noise level 46.5 dB (A) and the maximum noise level 53.5 dB (A) were observed. The relative high values of noise recorded in factory premises and suburban areas were primarily due to vehicular traffic and other activities.

9.4. Water Environment

- pH: pH of the all ground water sample ranges from 7.45 to 8.06 while surface water sample (i.e. Banganga Dam) shows 7.82.

- Total Dissolved Solids ranges from 140 to 484 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 56 mg/lit where as ground water shows these values in between 128 to 184 mg/lit.
- Calcium concentration of ground water is in between 32 to 46.40 mg/lit, while surface water shows its value 14.4 mg/lit.
- Chloride concentration of the ground water is 28 to 52 mg/lit and surface water shows its concentration 13.4 mg/lit
- Concentration of the Magnesium is between 11.52 to 17.28 mg/lit in ground water. This is high as compared to surface water but less than permissible limit.
- Nitrate concentrate is to less i.e. 3.55 to 5.10 mg/lit in ground water while surface water shows its concentration 0.30 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.

9.5. Socio-Economic Environment

In order to study the socio-economic aspects of the communities living in and around proposed project, the required data has been collected from the publications of Census Department, (2011 Census) Government of India.

The project area falls under the Phaltan, Man & Khatav Tehsil of Satara district. Total population in the study area (37 villages covering three tehsil) is 53604 having 11511 numbers of households. Overall 50.56 % of the population is male & 49.44 % are Female. The ratio of Male: Female in the study area is 1000:977.

To the total population SC & ST community are 9.8 & 0.4 % respectively.

Literacy rate of study area is 69.75 %. Among the literate, males have higher in comparison to the females.

Distribution of working class and nonworking class is very distinct. About 27861 (i.e. 51.97 %) population is working while 25744 (i.e. 48.02 %) of the population is in nonworking class. Main working population is 46.71 % while Non working population is 5.26 %.

9.6. 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 63 floral species recorded & no RET floral species is reported in the study area. The most abundant species in the study areas are *Carissa congesta Mangifera indica* L , *Agave cantula* Roxb, *Cynodon dactylon* (L.) Pers., *Heteropogon triticeus* (R.Br.), *Syzygium cumini* (L.) Skeels, *Pongamia pinnata* (L.) Pierre etc.

Six species of Mammals, 9 species of Amphibian & Reptiles and 57 species of birds were recorded in and around the periphery of the project during the study period. Animals, which are found surrounding the project area and categorized under, schedule I to Schedule IV of Wild Life Protection Act 1972 & subsequent amendment.

10. 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.

10.1. Impact on Air Quality and Management

Construction Phase

Increase in PM_{10}, SO_2, NO_X, & CO 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.

Operational Phase

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 (SO2) and Oxides of Nitrogen. Electrostatic Precipitators (ESP) & bag filters having high operational efficiency shall be provided for the boilers.

The stack emission details from the proposed activity are given below

Details of Stack Emissions

Parameters	**Proposed 19.5 MW**
Boiler Configuration	110 TPH
Type of Fuel	Bagasse
Calorific value	2250 Kcal/kg
Ash content	2%
Sulphur content	0.05%
Fuel Feeding Rate	Season- Bagasse : 42.28 TPH
	Off Season- Bagasse -32.52 TPH
Number of Stacks	1
Common Stack with no. of flues	Single Flue
Material of construction	RCC
Shape (round rectangular)	Round

Parameters	**Proposed 19.5 MW**
Stack Height from ground level (m)	82
Stack Dia. (m)	3.8 m
Exhaust Gas Temperature (^{0}C)	150^{0}c
Exit Gas Velocity (m/s)	11 m/s
Volumetric flow rate (m^3/s)	82.16 m^3/sec
APCE (Air pollution control equipment) Proposed	ESP with outlet concentration PM <50 mg/Nm^3
Emission Rate of PM (gm/sec) carried for impact assessment	During Season : 0.13 gm/sec During Off Season : 0.11 gm/sec
Emission Rate of SO_2 (gm/sec)	During season: 11.67 gm/sec During off- season : 8.89 gm/sec
Emission Rate of NOx (gm/sec)	During season: 8.8 gm/sec

10.2. Simulation Model for Prediction using Industrial Source Complex ISCST 3

The pollutants released into the atmosphere will be dispersed in the down wind direction and finally reach the ground at farther distance from the source. The ground level concentrations mainly depend on the strength of the emission source and micrometeorology of the study area.

The air dispersion model used is Industrial Source Complex Short Term (ISCST 3), Version 02035 developed by the US Environmental Protection Agency (US EPA), released on 02/04/2002 and recommended by Ministry of Environment & Forests (MoEF).

Predicted maximum ground level concentrations considering micro meteorological data of summer 2014 season are superimposed on the maximum baseline concentrations obtained during the study period to estimate the post project scenario, which would prevail at the post operational phase. Predicted 24 hourly Ground Level Incremental Concentrations for winter season as per below

Cumulative Predicted Ground Level Concentration for Three Month

Season	Year	Maximum Incremental Levels (μg/m³)			Distance (km)	Direction
		PM	SO_2	NO_x		
Summer March	2014	1.86	6.89	8.23	1.5	E

10.3. Impact on Water Quality & Management

Construction Phase

During construction, water will be required for construction activities, sprinkling on pavements for dust suppression and domestic & non domestic usages The impact on water environment during construction phase is likely to be short term and insignificant.

Operational Phase

SAPL has proposed to install air cooled cooling system which results in minimum water consumption in process. The total fresh water requirement for the proposed activity will be 509 m^3/day and waste water generation will be 78 m^3/day. The continuous efforts will be made to reduce the water consumption and thereby reduce wastewater generation. Flow meters will be installed on all major water inlets and the flow rates will be continuously monitored. Periodic water audits will be conducted to explore the possibilities of minimizing water consumption.

The wastewater generated from the different units such as cooling tower blow down, boiler blow down, DM plant, sugar process unit waste and sanitary waste of proposed activity shall be treated in ETP.

10.4. Solid Waste

Construction Phase

During construction phase solid waste envisaged chemical wastes, used oil, waste lubricants, paints, maintenance-related wastes, used air and liquid filtration media, and

empty or nearly empty chemical containers, most of these materials will be disposed off by authorized vendor/ incineration. While others will be sold in the market through a contractor, keeping record of them and informing the contractor of their hazards and rational use. Generation of solid waste during this phase shall be controlled by mitigation measures and impact will be insignificant.

Operational Phase

Details of solid waste generation and management presented below

Sr. No.	Particulars	Quantity	Disposal
1	Bagasse	205568 MT During Season (160 Days)	Used in Cogen Boiler (19.5MW)
2	Bagasse Ash	4105 MT generated during operation (Season as well as off-season)	Sell to brick and cement manufacturing unit
3	Press mud	28160 MT during season	Distributed to share holders which used as fertilizer on land
4	Molasses	28160 MT during season	Used for ethanol production
5	E.T.P. Sludge	9 MT during season 4 MT during off-season	Used for land filling & fertilizer for gardening in own factory premises

10.5. Impact on Noise Levels and Management

Construction Phase

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

Operational Phase

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.

10.6. Social Aspects

- During construction, the project will provide employment to local personal.
- During the operational phase also, the project will generate employment opportunity.
- Increase in employment opportunities and reduction in migrants to outside for employment, increase in literacy rate, growth in service sectors.
- Improvement in socio cultural environment of the project area
- Improvement in transport and communication services,
- Increase in employment due to increased business, trade commerce and service sector.
- This project does not involve any displacement of local people.
- Some people have concerns about the environmental aspects of the project.
- Public invasion by the outsiders to take place due to the project has also very minor concern for the people.

11. 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.

12. Environmental Management Plan / Environment Management Costs

Environmental Management Plan includes the protection, mitigation and environmental enhancement measures to be implemented to nullify the adverse impact on the environment. The management of the SIAL will take all the necessary steps to control and mitigate the environmental pollution in the designing stage of the project. While implementing the project SIAL will follow guidelines specified by CPCB under the Corporate Responsibility for Environmental Protection (CREP) for co-gen power plant. The EMP operation/implementation will be the responsibility of the "EHS Officer", who will be coordinating, arranging the collection and reporting of the results of all emissions, ambient air quality, noise and water quality monitoring.

12.1. EMP for Construction phase

The construction activities of the proposed activity will increase in dust concentrations and fugitive emission due to vehicles. Frequent water sprinkling in the vicinity of the construction sites will be undertaken. During construction phase SIAL 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 and domestic fuels.

12.2. EMP for Operation phase

Air Environment

The major pollutants from boilers during operation phase are PM_{10} & $PM_{2.5,}$ Sulphur Dioxide and Oxides of Nitrogen. These pollutants will be nullify by adopting following measure.

- Suitably designed ESP with efficiency of 99.9 % will be placed downstream of the stacks which will separate out the incoming dust in flue gas so as to maintain the emissions PM_{10} & $PM_{2.5}$ (50 mg/Nm3) at the outlet of the stack.

- The height of the stack will be 82 m and is of single chimney as per CPCB Norms.
- Stack emissions will be regularly monitored by SIAL/external agencies on periodic basis by installing online monitoring station.
- To control of the airborne fugitive emissions from the ash handling area will be achieved through regular water sprinkling in this area.
- Avenue plantation and green belt development will be undertaken in the operation phase.

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

The total fresh water requirement for the proposed activity will be 509 m^3/day and waste water generation will be 78 m^3/day. The continuous efforts will be made to reduce the water consumption and thereby reduce wastewater generation. Periodic water audits will be conducted to explore the possibilities of minimizing water consumption. SAPL has proposed to install air cooled cooling system which accompanying minimum water consumption in process.

100 % waste water will be recycled and reused so that plant will be operating on zero discharge concepts. Treated waste water will be used for dust suppression, green belt development, ash handling system and it will be recycled in process so that raw water consumption will be reduce.

Storm Water Management

Based on the rainfall intensity of the proposed area, storm water drainage system will be designed. Storm water drainage system will consist of well-designed network of open surface drains with rainwater harvesting pits.

Rain Water Harvesting Scheme

RWH structures will be provided to harvest the rain water from roof TOP and plant area. The collected rain water will be utilized for plant uses to optimize the raw water requirement. The surface water run-off from the main plant area would be led to a sump for settling and the over flow would be collected in the common water basin for further uses in the plant to optimize the raw water requirement of the plant. The excess rain water may be discharged to the nearest surface water body through dedicated storm water drain for recharging the ground water.

Solid waste management

Solid by-products such as bagasse, press mud and molasses are generated as process waste products (byproducts) from the industry. Press mud is supplied to member formers for their used as bio–manure and molasses is used in distilleries for its use as raw material in manufacture of ethanol. Bagasse produced from the Industry is used as a fuel in the boilers. Solid wastes such as boiler ash & ETP sludge are also produced from the proposed unit. These are disposed to farmers for their use as soil conditioner in land

Other solid waste

During operation some scrape will be generated it will be recycled by selling to authorized vendor. Dust bins will be placed at requisite locations. Solid waste generated from offices, canteens will be disposed in eco friendly manner.

***Sewage*:** Sewage from various buildings in the Project area will be conveyed through separate drains to the septic tank. The effluent from the septic tank will be disposed in soil, by providing disposing trenches. Oily water, if any, will be treated separately to remove oil

/ grease, before discharge into the effluent pond. The oily water collection in the plant is basically due to floor cleaning, leaky oil filters, etc. Provision for oil/grease separators will be made to skim oil / grease, if present in the waste water.

Occupational Health & Safety

During operation stage, dust is the main health hazard. Other health hazards are due to gas cutting, welding, noise and high temperature and micro ambient conditions especially near the boiler and platforms which may lead to adverse effects (Heat cramps, heat exhaustion and heat stress reaction) leading to local and systemic disorders.

- Adequate arrangements for preventing generation of dust by providing the chutes at transfer points to reduce the falling height of material, preventing spillage of material by maintaining the handling equipment, isolating the high dust generating areas by enclosing them in appropriate housing and appropriately de-dusting through high efficiency bag filters
- All workers engaged in material handling system will be regularly examined through PFT (Pulmonary Function Test) tests for lung diseases;

Ecology & Biodiversity

Flora and fauna inventories within the project area will be monitored on a twice yearly basis, as well as before and during the construction and early operating activities. This may involve the use of specific indicators, such as the occurrence of nests or nesting bird species of importance. It is intended that the implementation of the monitoring program will be conducted on a co-operative basis by the various stakeholders in the area

Green Belt Development

The main objective of the green belt is to provide a buffer zone between the sources of pollution and the surrounding areas. The green belt helps to capture the fugitive emissions and attenuate the noise apart from improving the aesthetics quality of the region. An area of about 18 acres is proposed for greenbelt development. Approximately 2500 trees per ha will be planted in consultation with the local Forest Department.

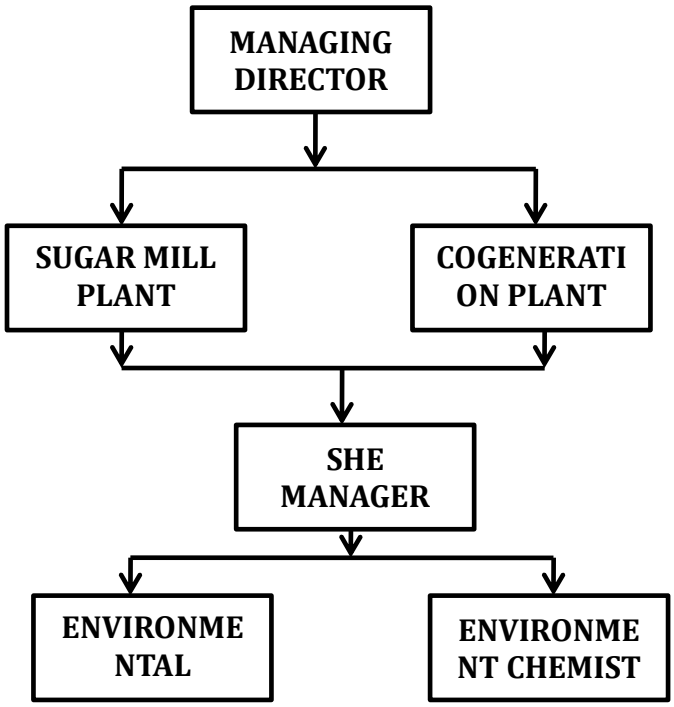
Fire Fighting & Protection System

The fire fighting system will be designed in conformity with the recommendations of the Tariff Advisory Committee (TAC) of Insurance Association of India. . While designing the fire protection systems for this proposed project its extreme ambient conditions need special attention. Codes and Standards of National Fire Protection Association (NFPA) will be followed, as applicable. The different types of fire protection / detection system envisaged for the proposed activity.

Institutional arrangements for environment protection & conservation

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. Organization structure of the Environment Management Cell is depicted below

It will be the responsibility of this Cell to supervise the monitoring of environmental attributes viz. ambient air quality, water and effluent quality, noise level etc either departmentally or by appointing external agencies wherever necessary. In case the monitored results of environmental contaminants are found to exceed the standard limits, the Environmental Management Cell will suggest remedial measures and get them implemented.



Environmental Management Cell

13. Budgetary Provision for Environmental management plan

- The Capital Cost of Cogen Power project is Rs. 114.71 Crores (as proposed to be approved by the funding agency/financial institution).

- Cost of EMP are presented below

During Construction Phase:

Sr. No	Name of Activity	Cost in INR , Lakhs
1	Sanitation	2.00
2	Potable water requirement for workers	2.00
3	Health Care	1.00
Total		**5.00**

During Operation Phase:

No.	Particulars	Cost in INR, Crore
One Time Installation Cost (Capital Cost)		
1	Air Pollution Control System (ESP, Stack)	2.0
2	Noise Control Systems	1.25
3	Green Belt Development	0.20
4	Environmental Lab	0.75
5	Water Pollution Control System - ETP	0.95
6	Occupational Health & Safety	3.0
	Total	**8.15**
Recurring Cost		
1	Environmental Monitoring /APH Maintenance	1.3
2	General Maintenance of ETP	0.20
3	Greenbelt maintenance	0.01
	Noise Pollution Control	0.02
4	Occupational Health & Safety	1.3
Total		**2.83**

14. Green House Gases (GHGs), Carbon Dioxide (CO_2), Carbon Credits:

The proposed bagasse cogen power plant being renewable energy project will contribute to Greenhouse Gases (GHGs) avoidance besides the several attendant benefits of making additional electricity available to national grid system.

15. Conclusion

This industry will provide power as useful commodity for India, which will save foreign exchange in these days. This will not disturb the present land use because our area occupied will be only small % of Influence zone 10 km. Compatible Architecture will be adopted and No Prime Agriculture Land will be put to this industrial use. Trees will be maintained and not razed down. No Rehabilitation is involved. The problematic waste

materials of sugar mills like molasses, press mud and bagasse will be utilized for useful products. People will get some jobs here and the sugar, power and organic compost generated here will be useful for farming and some incidental small employment like eatery, canteen, tyre repairs, and garage too will become available to genuine people. This will be beneficial to the society. Due to this project, farmer will get more prices for sugarcane.

- This project is economical in view of converting waste bagasse into useful steam, power and foreign exchange saver product.
- The local people desire that this industry will be welcome in their area.
- The candidate site is suitable from general MoEF expectations.
- Water, power, Raw material and Market is assured and found available with ease.
- Full precautions will be taken for Pollution Control, Resource Conservation and Environmental Protection.
- This is cost effective and Sustainable Development.