EXECUTIVE SUMMARY

1.0 Introduction

Krantiagrani Dr. G. D. Bapu Lad Sahakari Sakhar Karakhana Ltd. (KSSKL) is located in Kundal, Tal- Palus, Dist- sangali in state of Maharashtra. It is an existing factory manufacturing sugar with cane crushing capacity of 2500 TCD and has been running successfully. The Karakhana has attached Co-generation unit with an installed capacity of 13 MW in Phase I. Factory have proposed to expansion of sugar & co-generation project ,for expansion of changing in production capacity of sugar plant from 2500 TCD to 5000 TCD & co-generation from 13MW to 19.70MW. which would be expanded to 2500 TCD & co-generation expansion of 6.70MW in Phase II. The Director body of factory have widespread experience of setting up & managing large scale industries, Hotels, Agro Based Industries and management of large scale Entertainment and Hospitality units.

As per MoEF Notification, 14th September 2006, and further amended through notification No. S.O.3067 (E) dated 1.01.2009; the proposed project is falling under “A” category, based on general condition criteria as the project boundary falls within 10 kms from “Sagareshwar Wildlife Sanctuary (Manmade)”. Hence KSSKL submitted the form-I in the prescribed format to MoEF, Govt of India, New Delhi. Subsequently the proposal was considered by the Expert Appraisal Committee (Industry) in the 3rd Meeting held on 5th December, 2012. Based on the information furnished and ToR presentation before EAC, MoEF by the proponent.

In the seasonal period collecting bagasse quantity is generated about 147904 MT/Season. Which has heating value & can be used as fuel in place of coal. The raw material (bagasse) required 2,400 MT /M for existing capacity.

As per government regulation KSSKL approached MoEF New Delhi for environmental clearance for expansion of changing in production capacity of

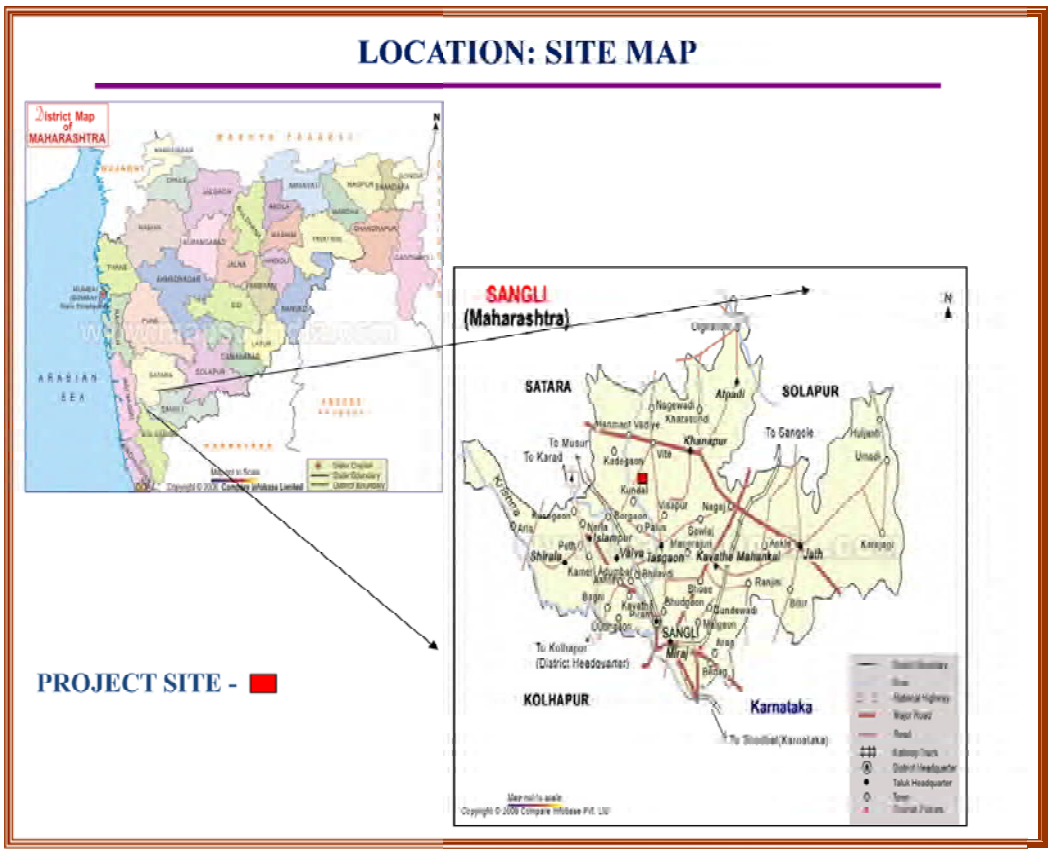
sugar plant from 2500 TCD to 5000 TCD & co-generation from 13MW to 19.70MW. Regd. No. of factory: SAN/TGN/PRG(A)S-78/1997 dt-12-5-1997.

The purpose of the preparation of Environment Impact Assessment (EIA) report is not only to obtain Environment Clearance from Ministry of Environment & Forests, Govt. of India, New Delhi, but also to understand the likely impacts and to take Environment Protection measures during and after commissioning of the project.

2.0 PROJECT DETAILS

The management of Kranti Sahakari Sakhar Karkhana Ltd. Propose production capacity of sugar plant from 2500 TCD to 5000 TCD & co-generation from 13MW to 19.70MW.at Kundal, Tal- Palus, Dist- Sangli.

Founder Chairman Was Late Dr. G. D. (Bapu) Lad & Mr.Arun Lad is Chairman & Mr.Popat Sankapal is Vice-Chairman of KSSKL.



2.1 Director Body of KSSKL.

Sr. No.	Name of Directors	Designation
1	Mr. Arun Ganpati Lad	Chairman
2	Mr. Popat Narayan Sankapal	Vice-Chairman
3	Mr. Mohan Shamrao Pawar	Directors
4	Mr. Shrirang Dinkarao patil	Directors
5	Mr. Bhimrao chandru Mahind	Directors
6	Mr. Lalaso Shidu Mahadik	Directors
7	Mr. Popat Vasant Fadtare	Directors
8	Mr. Tukaram Aaba Pawar	Directors
9	Mr. Jawahar Rajgounda Patil	Directors
10	Mr. Suryakant Dattatray Buchade	Directors
11	Mr. Bharatsinh Bhujangrao Fadnaik	Directors
12	Mr. Ramchandra Dattu Pawar	Directors
13	Mr. Atmaram Vithoba Harugade	Directors
14	Mr. Ramachandra Ganpatrao Deshmukh	Directors
15	Mr. Dilip Dattatray Patil	Directors
16	Mr. Kundalik jyoti Thorat	Directors
17	Mr. Dattajirao Akaram Mohite	Directors
18	Mr. Lakshman Tukaram Hendre	Directors
19	Mr. Niwruti Sakharam Patil	Directors
20	Mr. Prashant Bhupal Chougule	Directors
21	Mrs.Aanandibai Janardan Khude	Directors
22	Mrs.Shobha Sambhaji Salunkhe	Directors
23	Mr. Vijaysinh Shankarao Ghorpade	Exe. Directors

The proposed project is located at Sy No. 514 in Kundal, Tal-Palus, Dist-Sangali. The project falls at North Latitude 17˚8' 4.99'' & East Longitude 74˚25' 37.95''

2.2 Location Details

1.	Project site	Krantiagrani Dr. G. D. Bapu Lad Sahakari Sakhar Karkhana Ltd., Gat no. 514, Village Kundal, Tal. Palus, Dist. Sangli.
2.	Latitude & longitude	Latitude: 17˚8' 4.99'' N , Longitude: 74˚25' 37.95'' E
3	Factory Registration no.	Regd.No.of factory SAN/TGN/PRG(A)S-78/1997dt-12-5-1997
3.	Nearest town/city	The Sangli city is 40 Kms., Palus city is 7 Kms. & Islampur city is 25 Kms. from site.
4.	Nearest Highway	The site is 4 Kms away from Karad -Tasgaon State Highway.
5.	Nearest Railway Junction	Kirloskawadi Railway Junction: 4 Kms.
6.	Nearest Airport	Karad Airport is 30 Kms from the factory site.
7.	Topography	The factory site has leveled area. The elevation of about 625 meter above the sea level. It is found on the Survey of India Topo sheet No. 47 k/8 and 47 k/12 Climate : Semi - arid
8.	Surroundings	The site is 10 km from Krishna river. About 8km away from Sagareshwar Wildlife Park

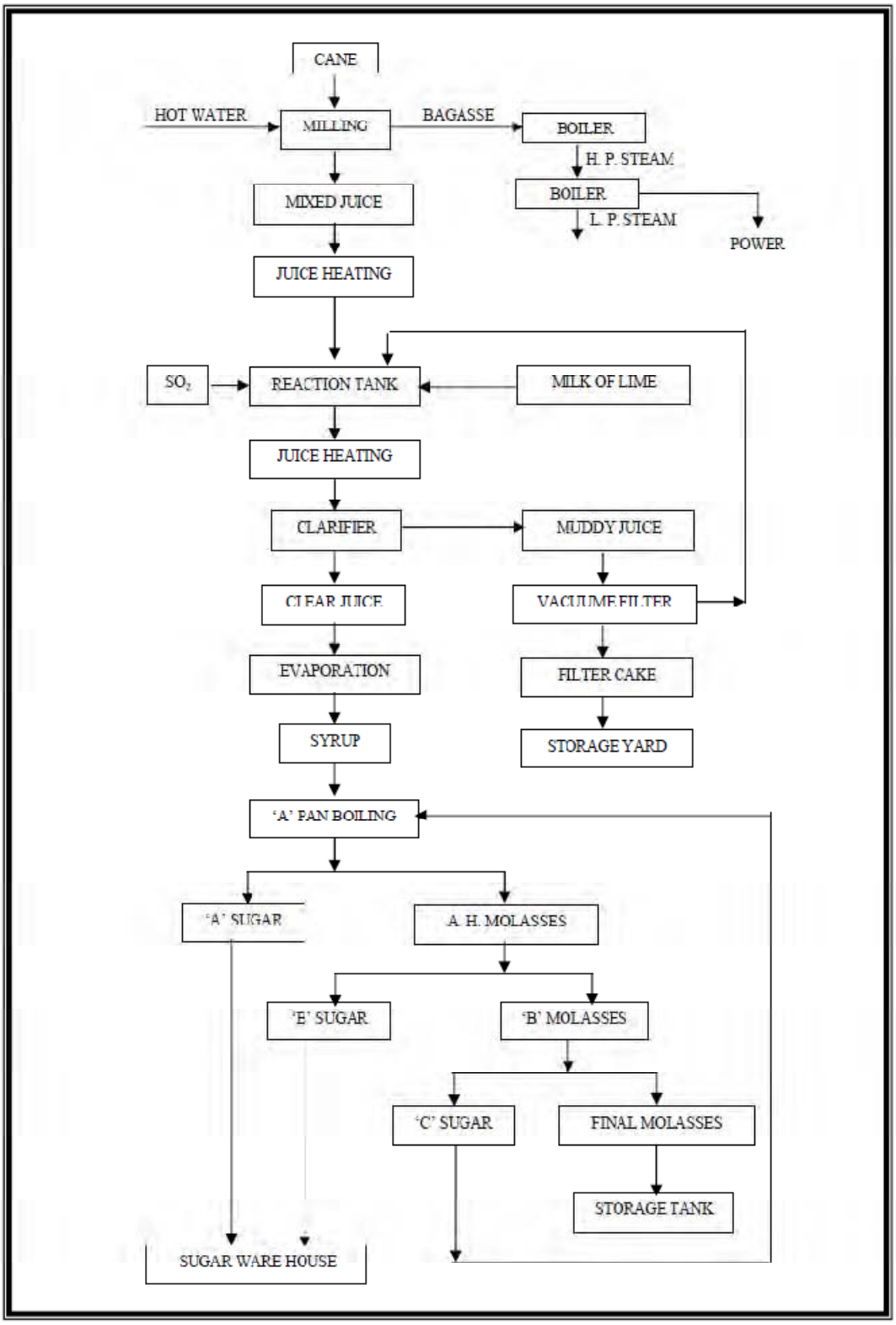
2.3 Table: Technical Information of Sugar Unit and Cogeneration Plant

Parameter	Description
Production Capacity	5000 TCD Sugar Unit and 19.70 MW Cogeneration Plant
Raw Materials Requirement	a. Sugar Plant:-Sugar Cane: 1,50,000 MT / M b. Lime:- 260 MT / Month c. Sulphar : 72 MT / Month
Water source and Requirement	579 m3/day and will be sourced from Krishna River. The intake point of water is at a distance of 10.0 km from the project site.
Boiler Capacity	The boiler would have steam generation capacity of 240TPH at 45 kg/cm3 pressure and 450deg.c temperature
Power Generation	The KSSKL has proposed to expand13MW power generation to 19.70 MW The raw materials required are bagasse 2,400 MT /M. In the seasonal period collecting bagasse quantity is about 147904 MT/Season. This quantity is used for 13MW power generation. New expanding unit required amount of bagasse for additional 6.7MW power generation.

2.4 Process Description

The flow diagram of sugar co-gen power plant are given in below figure.

Figure- Flow Diagram of Sugar & Co-Gen. power Plant Process



2.5 Water Requirement:

The water requirement for the proposed expansion is 185 m3/day and will be met from Krishna river. The total water requirement for 2500TCD sugar production & 13MW cogeneration unit is 285 m3/day. While water requirement for 5000TCD sugar unit & 19.70 MW cogeneration unit is 470m3/day

Sr. No.	Purpose	Water Intake M^3/Day	Losses M^3/Day	Effluent M^3/Day
1	Process	470	97	373
2	Industrial (Cooling)	165 + 7	7	*165 M^3 Recirculation after cooling and adding 7 M^3 make up water for losses
3	Domestic a) Factory b) colony	 67 35	 16 Nil	 51 35
	TOTAL	**579**	**120**	**459**

2.6 Fuel:

Fuel requirement is mainly for generation of steam in the boiler. Bagasse generated from the Sugar Plant i.e 147904 MT/season will be used as fuel for operation of the boiler. The fuel characteristics are given as under:-

Characteristics of Bagasse

S.No.	Particulars	Value
1	Calorific Value	4400 Kcal/kg (dry) 2250 Kcal/kg (wet)
2	Moisture content	45 – 55%
3	Ash Content	2 – 10 %
4	In sugar mill the crushed cane forms bagasse	30 -35%

Characteristics of Diesel Fuel (IS: 1448)

S.No.	Particulars	Value
1.	Acidity	Nil
2.	Ash%, by mass	0.01
3.	Carbon residue %, by mass	0.30
4.	Pour point, Max	03^0C for winter, 15^0C for summer
5.	Flash point	35^0C
6.	Kinematic Viscosity, cSt at 40□C	2.5-5.0
7.	Sediment %, by mass (max)	0.05
8.	Sulphur content by mass (max.)	0.05%
9.	Water content, % by volume, Max.	0.05

2.7 Raw Material Requirement

List of raw Materials to be used	**Quantity**	
Sugarcane	1,50,000 MT / Month	
Lime	260 MT / Month	
Sulphar	72 MT / Month	
Product		
Name of Products & By products	**Existing**	**Proposed Activity**
Main Products : a) Sugar b) Electricity	 8000 MT / Month 13 MW	 8000 MT /Month 6.7 MW
By-Products: a) Molasses b) Bagasse c) Pressmud	 3000 MT /M 24000MT /M 3000 MT /M	 3000 MT /M 24000 MT /M 3000 MT /M

3.0 Baseline Environment

A detailed survey of the quality of environment with relation to water, air, soil, noise, meteorology, land-use, flora, fauna, socio-economic and demographic pattern is carried out. EIA needs a datum on which the evaluation can be done. Therefore through baseline studies on present quality of the environment has been done.

3.1 Micro-Meteorology

The climate of this district is on the whole agreeable and is characterised by general dryness in the major part of the year. The cold season is from December to about the middle of February. The hot season which follows, lasts till the end of May. June to September is the south-west monsoon season and the two months, October and November, constitute the post-monsoon or retreating monsoon season.

On an average there are 49 rainy days (i.e., days with rainfall of 2.5 mm-10 cents or more) in the district. The average annual rainfall in the district is 692.4 mm (27.26"). The rainfall in the western portion of the district, near the Western Ghats is considerably higher than in the rest of the district.

The only meteorological observatory in the district is at Miraj. The records of this observatory may be taken as representative of the climatic conditions over the district in general. The cold weather starts by about the end of November and lasts till about the middle of February, December being the coldest month. In this month the mean daily maximum temperature is 29.5^0C while the mean daily minimum is 14.3^0C.

Skies are generally clear or lightly clouded during the months November to March. Cloudiness begins to increase progressively from April and

afternoons are more clouded than the mornings. During the monsoon months the skies are heavily clouded to overcast.

Winds are light to moderate except in the south-west monsoon season when they are stronger.

3.2 Air Environment

In general air quality is expressed in amount of pollutants present in air at respective time like Particulate Matter, Sulphur Dioxide and Oxides of Nitrogen. Many sources add to concentrations of these agents in ambient air like vehicular movement, venting of gases from industrial processes, construction and erection activity, units in the vicinity, dust storms, high speed winds etc.

Air quality was monitored and reported at surrounding villages like Kundal, Kumbhargaon, Palus, Andhali & Kamalapur, At KSSKL, ambient air monitoring is performed each year and always observed well in limits prescribed by MPCB.

3.3 Noise Environment

A preliminary reconnaissance survey has been undertaken to identify the major noise generating sources in the area. Noise at different noise generating sources has been identified based on the activities in the village area, ambient noise due to industries and traffic and the noise at sensitive areas like hospitals and schools. The noise monitoring has been conducted for determination of noise levels at select locations in the study area. Except for occasional time noise levels have been generally within limits.

3.4 Water Environment

Water quality has been checked for 10 Km radial distance surrounding by the project area. Four ground water sample each was collected from each village of Project Site, Palus, Kundal & Ramapur and analysed for parameters

stated in using standard methods of I.S / American Public Health Association and Water Pollution Control Federation.

The source of raw water for the plant will be bore wells as well as from the nearby Krishna river. KSSKL will set up to check water quality as per MPCB norms and I.S 10500 standards. The samples from Krishna river and Andhali Dam were collected & analyzed.

3.5 Land Environment

Satellite data for Rabi season was classified using supervised classification technique. Maximum likelihood algorithm classifier was used for the analysis. The scenes were individually classified and then were integrated to get a composite classified output where information from Rabi season is available. A truth table was generated taking 0.95 as the conversion threshold. After aggregation, the final classified output was converted in raster format. The image was then converted in raster format, which is understood by GIS. Eight landuse/landcover classes identified in total 10 km radius area around Project Site.

3.6 Biological Environment

The important features of environment are flora and fauna. They have countless life cycle modes, forms and activities that are important to be considered in EIA.

The facet of the natural environment includes vegetation and animals, flora & fauna. Human activity should not disturb the biological habitat, because then the man-kind itself will be harmed in turn. It will be necessary to know the natural existing environment as a background inventory. In the study area of 10 km radius of KSSKL, the Biological survey conducted and the list of flora and fauna given in the EIA report.

3.7 Socio –Economic Environment

Socio-economic environment forms an integral part of an EIA study. As regards to baseline environmental data in respect of Demography, Occupational Structure, Community Services such as Post Offices, Post & Telegraph Offices, Telephone, Educational and Health Care Facilities, Banks and Co – Operative institutes, social and Cultural Institutions present Buffer zone were collected from Department of Census operations, Government of India, Department of Statistics and Economics of the Government of Maharashtra, Village for preparation of existing environmental scenario in respect of these parameters. The amenities available in the villages under the study area denote the economic well being of the region. The study area as a whole possesses poor to moderate level of infrastructural facilities. The above data is obtained from Census 2001

4.0 Environmental Impact Prediction

4.1 Impacts during Construction & operation Phase and Mitigation Measures

Probable environmental impacts during construction phase are typically due to activities related to clearing of vegetation, leveling of site, civil constructions erection of structures and installation of equipment. During the Operation Phase the establishment of the project, results in emissions, generation of wastewater and solid waste.

i) Impact on Air Quality

The main sources for impact of air quality during construction period is due to movement of vehicles and construction equipment at site, dust emitted during leveling, grading, earthmoving, foundation works, transportation of construction material etc. Major sources of air pollution in Sugar & co-generation plant are boiler, and crushers.

Air Pollution Mitigation Measures

The dust generated will also be fugitive in nature, which can be controlled by sprinkling of water. Frequent water sprinkling in the vicinity of the construction sites would be undertaken and will be continued after the completion of plant construction as there is scope for heavy truck mobility. It will be ensured that diesel powered vehicles will be properly maintained to comply with exhaust emission requirements.

ii) Impact on Noise Levels

The major sources of noise during the construction phase are vehicles and construction. The operation of the equipment can generate noise in the range 85-90 dB (A) near the source.

Noise Levels Mitigation Measures

The noise control measures during the construction phase include provision of caps on the construction equipment and regular maintenance of the equipment. High noise producing construction activities will be restricted to daytime only.

iii) Impact on Water Resources and Quality

Impact on water quality during construction phase is due to non-point discharges of sewage generated from the construction work force stationed at the site. Runoffs from the construction yards and worker camps during monsoon could affect the quality of water bodies in the project area.

Water Pollution Mitigation Measures

Toilets with septic tanks will be constructed at site for workers. Construction yards will be constructed properly.

iv) Impact on Land use

Preparatory activities like construction of access roads, temporary offices, and go-downs, piling, storage of construction materials etc. will be confined within the project area. No forestland is involved. Therefore, impact will be negligible.

Impact on Topography

Most of the area forms plain land covered with mixed soil. Adequate storm water drains will be provided to collect and carry the surface runoff during monsoon to the natural drainage system of the project area.

v) Socio-economic Environment

The socio-economic impacts during the construction phase of the proposed Enhancement Sugar plant with Cogeneration Plant could result due to migrant workers, worker camps, induced development etc. The local population will have employment opportunities in related service activities.

4.2 Facilities to be provided by Labour Contractor

The contractor will be made to provide the following facilities to construction work force:

First Aid

At work place, first aid facilities will be maintained at a readily accessible place where necessary appliances including sterilized cotton wool etc. Ambulance will be kept at the site and made available at workplace to take injured person to the nearest hospital.

Potable Water

Sufficient supply of water fit for drinking will be provided at suitable places.

Sanitary Facility

Sanitary facilities will be provided at accessible place within the work zone and kept in a good condition. The contractor will conform to requirement of local medical and health authorities at all times.

Canteen

The canteen will be provided for the benefit of workers.

Security

KSSKL will provide necessary security to work force in co-ordination with State authorities.

4.3 Waste water generation

The total waste water generation from the Sugar plant along with the Cogeneration Plant will be432 m3/day. The generated wastewater will be sent to Effluent Treatment Plant (ETP) and the treated wastewater will be used for cane irrigation and green belt development.

4.4 Dry fly ash and Furnace bottom ash

Fly ash collected from the ESP hoppers and the airheaters hoppers and the ash collected from the furnace bottom hoppers can be used as landfill.

4.5 Impact on Ecology

The enhanced project will not have any significant impact on ecology as there are no reserve forests in the study area and in addition to that the project will implement an effective environmental management plan to control the emissions from the project.

4.6 Green belt development

The total project area acquired for plant is 98.04 acres, and 33% of it,32.35 acres will be used for green belt development. Local species will be preferred for green belt development.

4.7 Impact on Health

Adequate air pollution and noise control measures will be provided. The environmental management and emergency preparedness plans will be prepared to ensure that the probability of undesired events and consequences would be reduced, and adequate mitigation measures will be provided in case of an emergency. The overall impact on Human health is negligible during operation of plant.

5.0 Environmental Monitoring Program

Pollution Monitoring and Surveillance Systems For Proposed Enhanced Sugar Plant and Cogeneration power plant, the Indian Emission Regulations stipulate the limits for particulate matter emissions and appropriate stack heights will be maintained for keeping the emission levels in the ambient within the air quality standards.

5.1 Air Quality monitoring programme

It is proposed to monitor particulate emission qualitatively and quantitatively in the stack and with the aid of a continuous particulate stack monitoring system. The stack monitoring data would be utilized to keep a continuous check on the performance of ESPs. Further it is proposed to monitor and record the weather parameters such as temperature (maximum & minimum), Relative humidity, wind direction, wind speed, rainfall etc. on daily basis, for this purpose, it is proposed to install Weather Monitoring Station with necessary gadgets.

5.2 Post Project Environmental Monitoring

Environmental monitoring will be conducted on regular basis to assess the pollution level in the plant as well in the surrounding area.

6.0 Risk Assessment and Disaster Management Plan

An emergency occurring in the proposed Enhancement plant is one that may affect several sections within it and/ or may cause serious injuries, loss of lives, extensive damage to environment or property or serious disruption outside the plant. It will require the best use of internal resources and the use of outside resources to handle it effectively. . It is imperative to conduct risk analysis for all the projects where hazardous materials, fuels are handled.

6.1 Methodology

The Risk Analysis Study carried out under the following task heads:-

- **System Study**

  The system description covers the plant description, storage & handling of fuels / chemicals, etc.

- **Hazard Identification**

  The hazards associated with the proposed Enhancement Project have been discussed in terms of material hazards due to fuel storage.

- **Frequency of Hazard Occurrence**

  Based on the available international statistics and in-house risk database, the frequencies of occurrence for the different accident scenarios were determined. The frequencies derived from the historical database have been checked with the possible hazard scenario identified during hazard identification.

- **Consequence Analysis**

  Based on the identified hazards, accident scenarios and the frequency of occurrence, consequence calculations were done for spreading distances (zone of influence) or risk distance for Pool fires.

- **Risk Reducing Measures**

  Necessary risk reducing measures have been suggested based on the consequence scenarios.

6.2 Remedial measures:

- ✓ Storage in tightly closed containers in a cool, well-ventilated area away from WATER, HEAT, COMBUSTIBLES (such as WOOD, PAPER and OIL) and LIGHT.
- ✓ Storage away from incompatible materials such as flammable materials, oxidizing materials, reducing materials, strong bases.
- ✓ Use of corrosion-resistant structural materials and lighting and ventilation systems in the storage area.
- ✓ Wood and other organic/combustible materials will not be used on floors, structural materials and ventilation systems in the storage area.
- ✓ Use of airtight containers, kept well sealed, securely labelled and protected from damage
- ✓ Use of suitable, approved storage cabinets, tanks, rooms and buildings.
- ✓ Suitable storage will include glass bottles and containers.
- ✓ Storage tanks will be above ground and surrounded with dikes capable of holding entire contents.
- ✓ Limit quantity of material in storage. Restrict access to storage area.
- ✓ Post warning signs when appropriate. Keep storage area separate from populated work areas. Inspect periodically for deficiencies such as damage or leaks.
- ✓ Have appropriate fire extinguishers available in and near the storage area.

The following measures are adopted for reducing the risk involved in pipeline systems.

7.0 Project Benefits

This project development will give rise to social and economic development measures in the study area.

7.1 Improvement in Physical Infrastructure

- ➢ Road Transport facilities
- ➢ Educational facilities
- ➢ Water supply and sanitation

7.2 Improvement in Social Infrastructure

- ✓ Education facilities
- ✓ Banking facilities
- ✓ Post offices and Communication facilities

- ✓ Medical facilities
- ✓ Recreation facilities
- ✓ Business establishments

  Community facilities

8.0 Environmental Management Plan

The Environmental Management Plan (EMP) of the Expansion plant with respect to noise, air quality, water quality, solid waste, ecology, landscape socio-economic measures.

8.1 Air Environment

- ➢ All sources of dust generation in the Sugar Plant with Cogeneration Plant shall be well designed for producing minimum dust and shall be provided with high efficiency Bag filters and Wet Scrubber.
- ➢ Particulate Matter emission level from the stack chimney will be less than 50 mg/Nm3 and the stack height is proposed to 90 m.
- ➢ SO2 concentration will be negligible as the bagasse will be used as fuel for boiler.
- ➢ The periodic evaluation for the efficiency performance of Wet Scrubber will be carried out.
- ➢ For controlling fugitive dust, in hopper, reclaimer, conveyors, silos etc. bag filters shall be installed.
- ➢ Fugitive emissions due to storage, transportation, etc. and the leakages and spillages shall be continuously monitored and controlled.
- ➢ Water conservation measures shall be undertaken for effective implementation. Cooling water is put into closed circuit to minimize the evaporation losses.
- ➢ Thermal insulation will be provided wherever necessary to minimize heat radiation from the equipment, piping etc., to ensure protection of personnel.

8.2 Noise Environment

- ✓ The design features of machineries shall be provided to ensure low noise levels in the working areas.
- ✓ Extensive vibration monitoring system will be provided to check and reduce vibrations. Allfans, compressors etc., are provided with vibration isolators to reduce vibration and noise.
- ✓ Provision for silencers wherever possible.

- ✓ Green belt development will be done and it will act as noise reducers.
- ✓ Requisite enclosures will also be provided on the working platform/areas to provide local protection in high noise level areas.
- ✓ All heavy earthmoving equipment will be kept in a well maintained condition.
- ✓ Proper lubrication and house equipment will be kept in better condition.

8.3 Waste water Management

- ❖ No trade effluent shall be discharged from the Plants
- ❖ Cooling water is put into closed circuit to minimize the evaporation losses
- ❖ The domestic sewages from the Plants, Sugar Plant with Cogeneration Unit and Township shall be treated in the Sewage Treatment Plant.
- ❖ No percolation of treated water to deep ground water table is done.
- ❖ Periodical monitoring for specific parameters shall be done regularly.
- ❖ Rainwater harvesting structures shall also be developed.

8.4 Rain Water harvesting System

The rain (storm) water from the building roofs, non-process area and grade level surfaces will be directed through the rain water harvesting structures and excess water will be directed through open drains to the storm drainage system. The storm water from the storm drainage system will be discharged outside the plant boundary.

8.5 Occupational Health & Safety

During operation stage, dust causes 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.

8.6 Design of Green Belt

Green belt development in around 33 % of the total plant area i.e. 32.35 acres will be developed. Green belt of around 50 m width will be provided throughout the periphery of the existing project site.

9.0 Conclusion

The potential environmental, social and economic impacts have been assessed. The proposed Sugar Unit and Cogeneration Plant will have certain levels of marginal impacts on the local environment. Implementation of the project will have beneficial impact in terms of providing direct and indirect employment opportunities. There will be a positive socio-economic development in the region. Quality of life of the people will be improved. Recommendations made in the CREP for Sugar Plant will be implemented. KSSKL will also undertake various community welfare measures for the upliftment of the villages of the study area.

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