PRE-FEASIBILITYREPORT

FOR

PROPOSED 40 KLPD ABSOLUTE ALCOHOL PLANT

FOR

SUGAR MOLASSES BASED DISTILLERY

At

Kisan Sahkari Chini Mills Ltd., Sneh Road, Najibabad, Bijnor

Uttar Pradesh

APPLICANT

M/s UP Cooperative Sugar Factories Federation Limited,

9A, Rana Pratap Marg, Lucknow,

Uttar Pradesh

PRE-FEASIBILITY REPORT

1.0 INTRODUCTION

Earlier, the assessment of the projects was done on Technical feasibility reports and Cost-Benefit-Ratio which mainly considered financial & technical resources. But no consideration was given to the environment protection in this evaluation and these flaws became apparent with continuous deterioration of environment. Thus in order to have more realistic evaluation, and keeping in view the deteriorating conditions, another dimension was added which is now called as "Environmental Impact Assessment" (E.I.A.). This forms an integral part of the project and is taken into account while appraising the project at different stages. Thus in the new comprehensive approach all considerations like, Technical, Financial & Environmental are given due weightage.

M/s UP Cooperative Sugar Factories Federation Limited is proposing to install 40 KLPD Absolute Alcohol Plant For Sugar molasses based Distillery at Kisan Sahakari Chini Mills Ltd., Sneh Road, Najibabad, Bijnor, Uttar Pradesh.

As per EIA Notification dated 14th Sept., 2006 and amended from time to time, the proposed project falls under Category "A", Project or Activity 5(g) due to 40 KLPD molasses based plant. They have to submit Form-I along with Pre-Feasibility Report and other relevant documents for getting Environmental Clearance. This pre-feasibility report has, therefore, been prepared by the consultant to assess the likely impact of the proposed on various factors which may be affected with the implementation of the programme and to suggest remedial/precautionary measures, if any.

2.0 PROFILE OF THE COMPANY & PROMOTORS.

M/s UP Cooperative Sugar Factories Federation Ltd. Is planning to install 40 KLPD of Absolute Alcohol plant for sugar molasses based distillery at Sahkari Chini Mills Ltd. Sneh Road, Nazibabad, Distt. Bijnor, Uttar Pradesh. Absolute alcohol demand on All India basis is going to increase in proportion to Petrol Consumption with 5% blend. The demand for absolute alcohol outstrips the supply quit considerably. The sale price of absolute alcohol which is now at Rs. 33.80 per litre is going to increase in near future to beyond Rs. 35/Litre.

The mill is located in an area with abundant availability of sugarcane. The installed capacity of the mill was 2500 TCD and over a period established an average crushing capacity of 3000 TCD. The plant performance over the last decades indicates a steady crushing with season varying between 160-200 days with a maximum crushing of 5,47,000 tonnes in 1995-1996 season as shown in Table 1:

Table 1:Performance of the Kisan Sahakari Chini Mills Ltd., Sneh Road U.P. (3000 TCD)

Year	Cane Crushed (Lakh Tonnes)	Molassses				
		Production (Tonnes)	% Cane	Brix %	Purity %	TRS
1996-97	5.47	28900	5.28			
1997-98	4.67	21860	4.68			
1998-99	4.64	23014	4.96			
2006-07	5.05	25557	5.06	87.5	29.57	46.47%
2007-08	4.33	21552	4.89	88.1	30.39	46.47%
2008-09	2.59	12408	4.79	88.78	30.19	46.47%
2009-10	3.39	15725	4.64	89.60	29.69	46.47%
2010-2011	3.65	17820	4.88	87.63	29.28	46.47%
2011-12	4.70		4.75	88.00	29.50	46.47%

Molasses production is varying from 4.68 to 5.28 % on cane. Crushing was poor in seasons 2008-2009 due to poor crop position. It is, however showing increased crushing levels subsequently. It is therefore, likely that the mill will be able to crush 5 lakh tones of cane @3000 TCD in a normal crop season.

In order to improve the viability, the sugar mill is contemplating a synergic diversification of product mix. This can be done by utilizing the waste products of sugar cane from the manufacture of sugar. The most important waste products of sugar cane, as is well known are molasses, the unrecovered sugar bearing residue of cane juice, Bagasse and press mud. The most simple way of using molasses is to manufacture Ethyl Alcohol (RS/ENA/AA) which has a vast potentiality in a variety of ways. This will give a value addition to this waste product. Press mud

along with waste Bagasse is the source of Potash rich organic fertilizer from waste liquor from distillery. Bagasse is a source both for energy and as a replacement of wood in some respects such as paper, board etc.

3.0 BASELINE ENVIRONMENTAL SETTING

3.1 The State

Uttar Pradesh (UP), is a state located in northern India. It was created on 1 April 1937 as the United Provinces, and was renamed Uttar Pradesh in 1950. Lucknow is the administrative capital of Uttar Pradesh. Ghaziabad, Kanpur, Moradabad, Aligarh, and Varanasi are known for their industrial importance in the state. On 9 November 2000, a new state, Uttarakhand, was carved out from the Himalayan hill region of Uttar Pradesh.

The state is bordered by Rajasthan to the west, Haryana and Delhi to the northwest, Uttarakhand and the country of Nepal to the north, Bihar to the east, Jharkhand to the southeast, Chhattisgarh to the south and Madhya to the southwest. It covers 93,933 square miles (243,290 km2), equal to 6.88% of the total area of India, and is the fourth largest Indian state by area. With over 200 million inhabitants in 2011, it is the most in the country as well as the most populous country subdivision in the world. Hindi is the official and most widely spoken language in its 75 districts. Uttar Pradesh is the fourth largest Indian state by economy, with a GDP of ₹7080 billion (US$110 billion). Agriculture and service industries are the largest parts of the state's economy. The service sector comprises travel and tourism, hotel industry, real estate, insurance and financial consultancies.

Uttar Pradesh was home to powerful empires of ancient and medieval India, including Magadha, Nanda, Mauryan, Sunga, Kushan, Gupta, Gurjara, Rashtrakuta, Pala and Mughal whi ch many say was improved by the Nawabs of Awadh. The two major rivers of the state, the Ganga and Yamuna, join at Allahabad and then flow as the Ganga further east. The state has several historical,natural,andreligioustouristdestinations,suchasthe TajMahal, Varanasi, Piprahwa, Kaushambi, Kanpur, Ballia, Shravasti, Kushinagar, Lucknow, Chitrakoot, Jhansi, Allahabad, Budaun, Meerut and Mathura.

3.2 District Bijnor

Bijnor, or more correctly Bijnaur, occupies the north-west corner of the Moradabad Division (historically, Rohilkhand or Bareilly region), and is a roughly triangular stretch of country with its apex to the north. The western boundary is formed throughout by the deep stream of the river Ganges, beyond which lie the four districts of Dehradun, Saharanpur, Muzaffarnagar and Meerut, all belonging to the meerut Division. To the north and north-east in the hill country of Garhwal, the dividing ling being the submontane road, which runs from Hardwar along the foot of the Himalayas to Ramanagar, Haldwani

and Tanakpur. This road, popularly known as the Kandi Saradk, belongs throughout its length to Garhwal, the transfer having taken place a few years since. On the east the Phika river for the greater part of its course constitutes the boundary, separating this district from Naini Tal and Moradabad, as far as its junction with the Ramganga; and to the south lie the Thakurdwara, Amroha, and Hasanpur tehsils of Moradabad, the boundary being conventional and undetermined by natural features.

3.3 Project Site

The Plant site is located at Kisan Sahakari Chini Mills Ltd., Sneh Road Najibabad, Bijnor Uttar Pradesh. It lies near Long: 78°23'46.60" East and Lat: 29°38'28.48" North and is at an Altitude of about 200 m above mean sea level. It is about 6.11 Km from Najibabad . The nearest railway station is Najibabad Railway Station which is at a distance of about 7.5 km from the project site. It is about 0.25 km from NH-119.

Figure – 1 Google Image

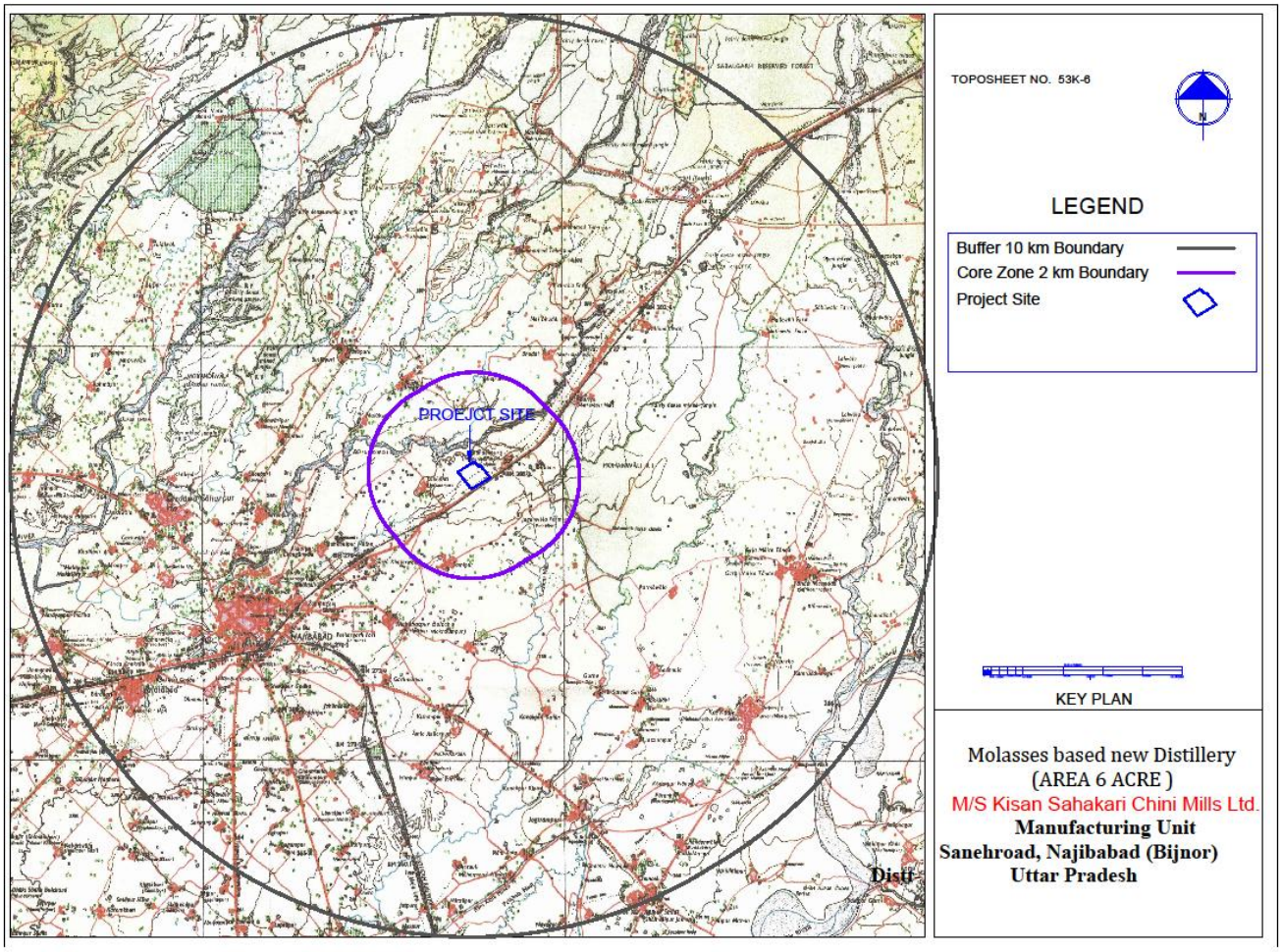

Figure-2 Key Plan

MKD.NO.	DESCRIPTION	SIZE OF HOUSE	AREA IN SQ.M	MKD.NO.	DESCRIPTION	SIZE OF HOUSE	AREA IN SQ.M
1	FERMENTATION SECTION & AIR COMPRESSOR	40Mx20M	800	8	MOLASSES STORAGE TANK	20M DIA.	-
2	DISTILLATION SECTION	20Mx10M	200	9	EXCISE OFFICE	5Mx4M	20
3	BULK STORAGE SECTION	26Mx40M	1040	10	SECURITY OFFICE	6Mx4M	24
4	COOLING TOWER FOR FERMENTATION SECTION	6Mx5M	30	11	WEIGH BRIDGE	5Mx5M	25
5	COOLING TOWER FOR DISTILLATION SECTION	6Mx5M	30	12	EVAPORATION PLANT	80Mx30M	2400
6	BOILER , TG.& DG.HOUSE	25Mx12M	300	13	ADMINISTRATION & ACOUNT OFFICE	6Mx20M	120
7	WATER TREATMENT PLANT	20Mx5M	100	14	RECEIVER HOUSE	4Mx40M	160
				15	COOLING TOWER FOR DISTILLATION SECTION	6Mx5M	30

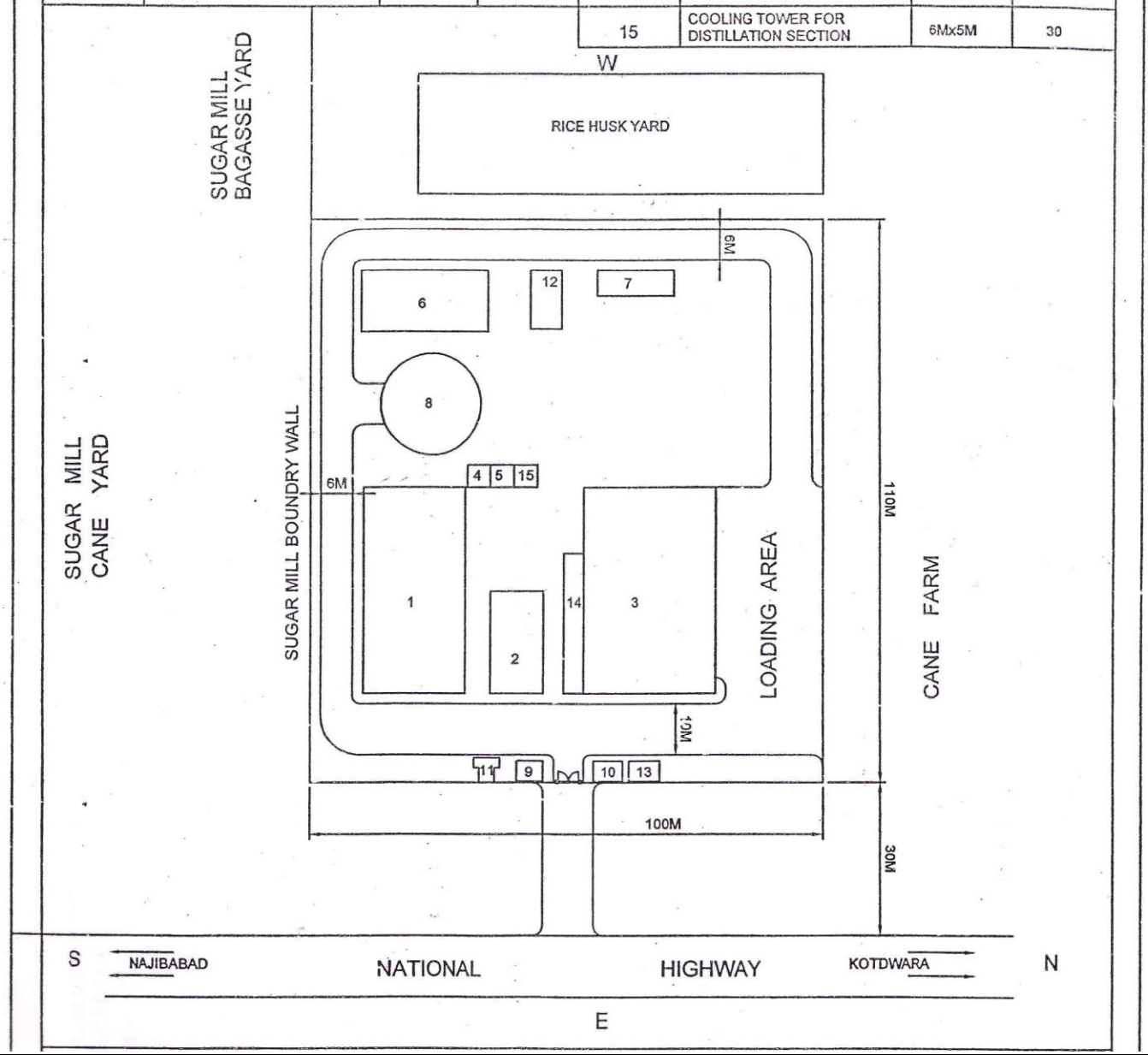

Figure –3 Layout Plan

4.0 PROJECT DESCRIPTIONS

4.1 General

The Plant site is located at Kisan Sahakari Chini Mills Ltd., Sneh Road Najibabad, Bijnor Uttar Pradesh. It is about 6.11 Km from Najibabad . The nearest railway station is Najibabad Railway Station which is at a distance of about 7.5 km from the project site.

The unit has 6 acre land. The total cost of the project is ₹4800 Lakhs.

4.2 Raw Materials Requirement

Table 2 : Raw Material Requirement

S. No.	Particular	Requirements	Source of the Raw Material & Mode of Transportation
1.	Molasses	**40000 tonnes/year**	Own Sugar Mill/Truck-Tankers.
2.	Fresh Water	**685 m^3/day**	Ground water
3.	Steam Requirement	**10.0 TPH**	Own Boiler & Turbine
4.	Fuel		
	Baggase	**10800T/yr.**	

Table 3 Plant Site and Location

S.No	Particulars	Details
1	**Location**	
a	Village/ Town/Plot No.	Kisan Sahakari Chini Mills Ltd.
b	Tehsil	Najibabad
c	District	Bijnor
d	State	Uttar Pradesh
e	Latitude	29°38'28.48"
d	Longitude	78°23'46.60"
f	Toposheet No.	53K6
2	**Elevation**	200.6 mts.
3	**Land use at the project site**	Industrial
4	**Climatic Conditions**	
	Temperature Rainfall Relative Humidity, % Wind speed, Kms/hour	Min: 5^{o}C, Max:44 ^{o}C 967 mm (average) Min: 23%, Max:80% 10 Km (approx.)
5	**Nearest highway**	NH-119,0.25 Km
6	**Nearest railhead**	Najibabad Railway Station, 7.5 km
7	**Nearest airport**	Jolly Grant Airport, Dehradun, 65 km
8	**Nearest major city**	Najibabad 6.11 km
9	**Nearest major settlement**	Najibabad 6.11 km
10	**Features with 10 km :**	
i)	**Defence installations**	Nil
ii)	**Archaeological important places**	Nil
iii)	**Wild life sanctuaries**	Nil
Iv)	**Reserved/Protected forest**	Mohanwali RF, 2.0 km
v)	**Industries**	General Industries like Brick Kiln, Rice Sheller etc
vi)	**Rivers**	Nil
vii)	**Hill ranges**	Nil
viii)	**State Boundary**	Nil

4.3 MANUFACTURING PROCESS DESCRIPTION :

Sugar molasses in chosen as the raw material for the production of various grades of alcohol proposed to be produced, in as much as the distillery is a captive unit of Kisan Sahakari Chini Mills Ltd., Sneh Road. There are two grades of alcohol to be manufactured primarily. These are Rectified Spirit (RS) and Fuel Grade Absolute Alcohol (A.A.). Based on the technology review, it is proposed to use modified batch fermentation followed by the multi-pressure distillation for the production of R.S. Absolute alcohol is proposed to be manufactured from R.S. based on molecular sieve distillation process. Impure spirit cut through is produced is blended with R.S. for A.A production subject to level of Aldehyde impurity. These flow schemes are shown in Fig. 4, 5, 6 and described as below:

Fermentation:

Yeast is developed form fresh slant in laboratory flask and the culture thus obtained is further propagated in three stages. Yeast propagation vessels (VO_2, VO_3, VO_4) where sterilized dilute molasses are taken from VO1 which operate in series but in batch mode. When enough biomass strength is developed , it is pitched into prefermenters VO5 and VO6 and from thereon to fermenters through D-04 through D-07. The yeast vessels are fitted with jacket for sterilizing and cooling the medium in situ. Sterile air is supplied to those vessels through non-lubricated, oil free compressor (G-01) and the sterilization system (F-01) comprising a series of fine filters followed by HEPA filters. Molasses form the Molasses tank T-01 in the yard are pumped by transfer pump (P-01) into molasses day tank and thereon to molasses receiving tank and then on to tipper type molasses weighing system M-01 and weighed molasses feed tank (T-03) from where molasses feed pump (P-02) pumps it to yeast vessels (when necessary) or to fermenter (D04-D07) through a static mixer type molasses diluter M-02.

There are four fermented each of 240 kilo liter capacity. The feeding of bio mass and dilute broth are periodic and regulated so that the sugar content and yeast population are regulated to give best of efficiency and activity. The exothermic heat of fermentation is extracted by circulating the fermenter contents through wort collers (E02 & E03). Temperature in the fermenters is to be maintained at 32-34^{0}C. Carbon Di-oxide evolved during fermentation is vented out through scrubber (C-01) to recover entrained alcohol vapors. The final fermented wash is transferred by wash transfer pump (P-05) to wash holding tank T-05 from where wash feed pump P-07 pumps the same to distillation plant. It may be noticed that there is no sludge separation conceived. The yeast sludge is rejected at the distillation plant. Part of spent wash from a selected tray in the analyzer column C-01 of distillation section is returned to fermenters after cooling the same to as near to ambient temp as possible as a measure of reducing the water consumption and high TDS in spent wash. Anti foam oil is added from D-01 whenever necessary when the level in the fermenter rises beyond a limit due to foaming because of run away fermentation rate. Process water is taken into scrubber (C-01) and from there to scrubber water tank T-04. All process water in the fermentation section is supplied by water supply pump P-06 from this tank.

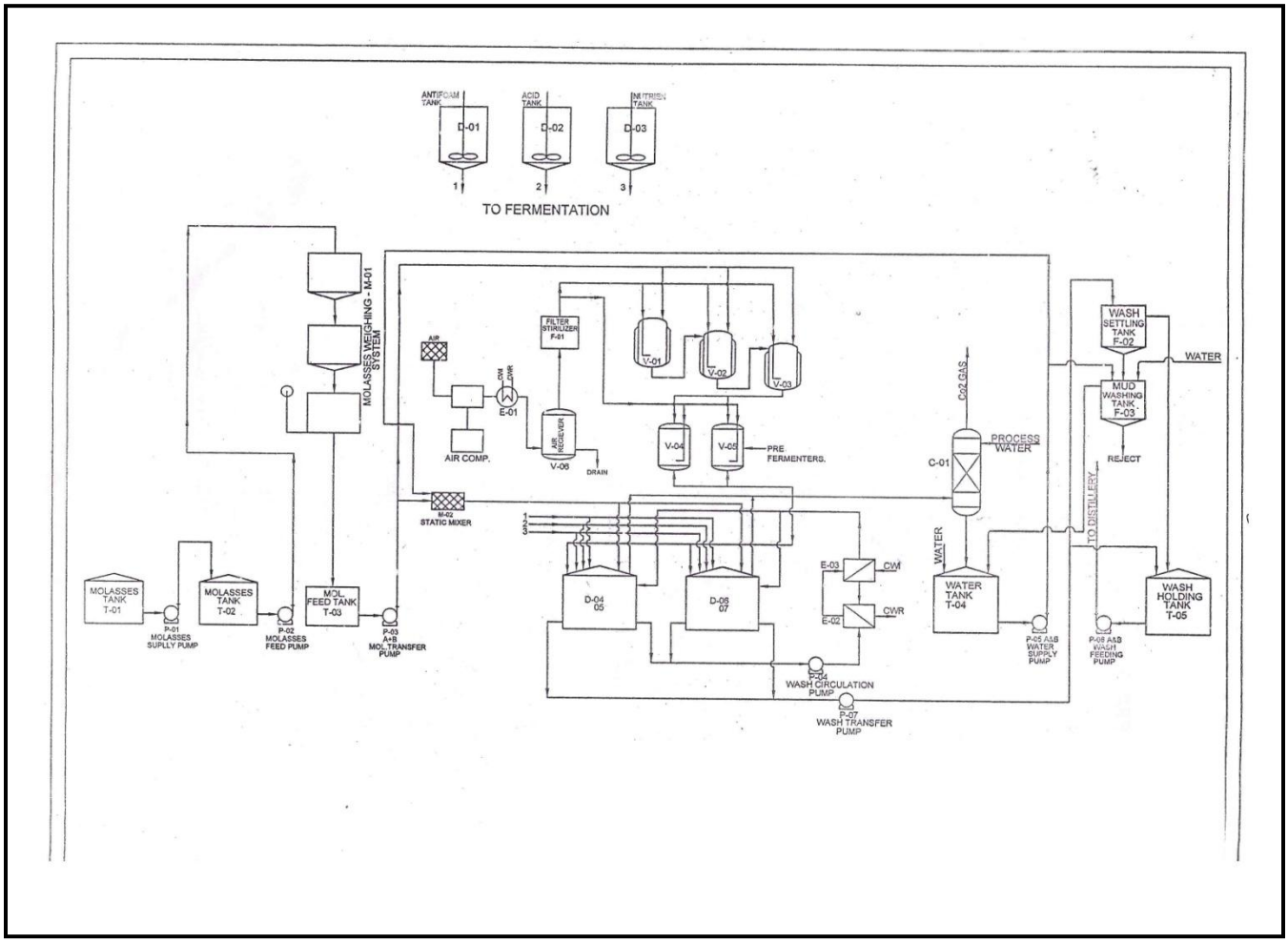

Figure 4

Distillation

While, fermentation section is the heart of productivity, distillation section is the heart of quality production. This section, as mentioned earlier, is the most energy consuming and hence is provided with utmost automation and is designed for maximum energy conservation. The system is designed to give Grade 1 quality rectified spirit. Impure spirit taken out to facilitate quality rectified spirit production for sale However; this is mixed back with rectified spirit as feed for production of absolute alcohol or blended with R.S. to make SDS. Thus technically no impure spirit is produced. Fermented wash from wash holding tank T-01 is pumped by wash feed pump P-01 to the top of degassing column (C-02) after preheating the same in beer heater E-02 and spent wash heat exchanger E-01.The vapors along with non-condensable gases from the top of degassing column (C-02) are rectified in heads column (C-03) to expel the high volatiles technically known as heads NTA and taken out as impure spirit.

Bottom liquid from the degasser flow into analyzer column (C-01) where alcohol is stripped from the liquid. Liquid from bottom of analyzer column (C-01) is completely stripped of alcohol and is pumped out by spent wash discharge pump P-02 through heat exchanger E-01 where it preheats the fermented wash before it enter degassing column. Part of spent wash is re-circulated to fermentation section depending on the fermenter parameters, a s measure for reducing the water consumption in the plant.

The Dilute alcohol vapours from near the top of analyzer column (C-01) are condensed first in beer heater (E-02) while exchanging heat with wash feed and then in analyzer condenser (E-03). Degasser, analyzer and heads column operate under vacuum. The condensate from E-02 and E-03 is collected in Rectifier Feed Tank V-02. The vapours to analyzer for stripping are generated from analyzer column bottom liquid in the analyzer column re-boiler (E-04) by using the rectified vapours, as discussed subsequently, from rectified vapours, as discussed subsequently, from rectifier which works under pressure.

Vapours from the top of heads columns (C-03) are condensed in heads column condenser (E-06) and then in heads column vent condenser (E-07). Part of the condensate is returned to column vent condensate is returned to column to C-03 as reflux while a small portion is taken out as an impure spirit cut. Liquid from bottom of C-03 is also taken into Rectifier feed tank V-02.

Dilute alcohol water mixture from rectifier feed tank (V-02) are pumped by rectifier feed pump (P-04) through rectifier feed pre-heater E-11 into rectifying column (C04). Rectifier and its associated equipment work under pressure so that these vapors can supply the necessary heat for generating the vapours from spent wash, in analyzer column (C-01) as described earlier.

Rich alcohol vapours at a concentration of 95.5% V/V from top of rectifying column (C-04) are condensed first in Analyzer Re-boiler (E-04) and then in Reflux Vent Condenser (E-05). The liquid from E-04 and E-05 are collected in Rectifier Reflux Tank (V-01). Part of the liquid from E-05 may be drawn off as impure spirit, if necessary.

Liquid from the reflux tank (V-01) is pumped by reflux pump (P-03) partly as impure spirit product and partly as reflux to the top of the rectifying column (C-04). The necessary rectifying vapours to C-04 are generated by boiling the C-04 bottom liquid in Rectifier Column Re-boiler E-08 using medium pressure steam. Some side streams are drawn from rectifier column as light and heavy fractions of higher alcohol called fuel oils and cooled in fuel oil cooler E-09, mixed with water and allowed to separate out in fuel oil separator F-01. All vents from E-03, E-07, V-07 and E-05 are connected to Vent Gas Absorber (C-05) where the vent gases are scrubbed with water to recover entrained alcohol. The scrubber water is used for washing the fuel oils in fuel oil separator to recover alcohol from the fuel oil fractions. The absorber vent is connected to vacuum pump (G-01) which is used to create vacuum in the analyzer and degasser.

The products Rectified Spirit and impure spirit and impure spirit are cooled in product coolers and collected in the respective receiver tanks prior to pumping the same through respective transfer pumps into storage tanks in the excise go down. Impure spirit, is however, returned to Ethanol plant along with the rectified spirit feed.

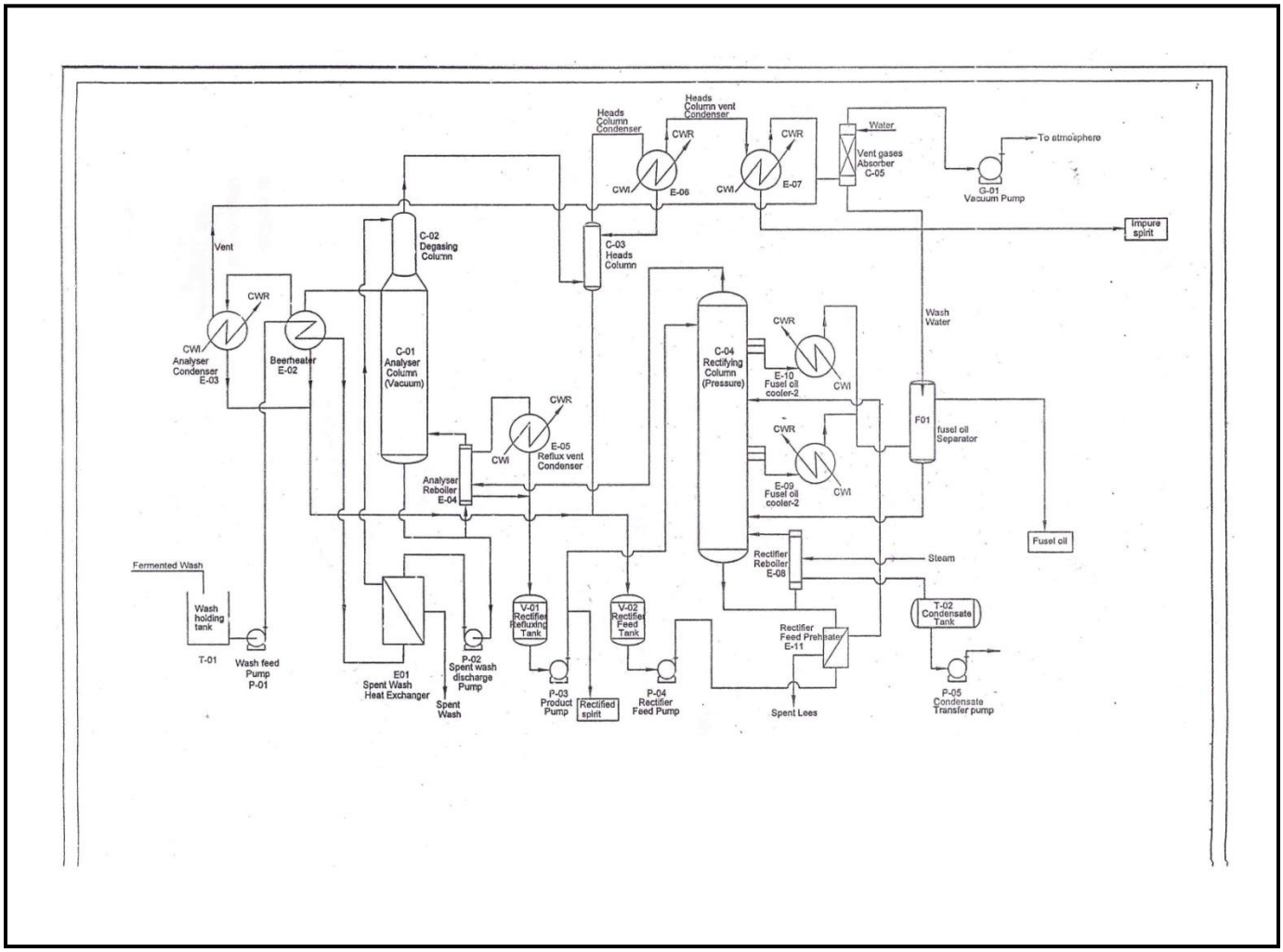

Figure 5

Fuel Grade Ethanol

Absolute alcohol is manufactured by dehydration of Rectified Spirit. The process adopted here is based on Pressure Swing Adsorption (PSA) system using Molecular Sieves (3-A).

Rectified spirit, after preheating by waste hot streams, is vaporized and superheated in E-03 and E-04 by using medium pressure steam at 6 kg/cm2 g pressure. Hot Vapours at 2 kg/cm2 g pressure and 130°C temperature pass through PSA column S-01/S-018 where the water vapours are retained while water free alcohol is released as vapours. These vapours are retained while water free alcohol is released as vapours. These vapours are condensed in E-07 and E-08 and collected as Absolute Alcohol. When the molecular sieve bed is saturate with water the alcohol vapours are shifted to the other tower and the first tower is taken for regeneration. Regeneration is done first by pressure releasing and creating vacuum and then by elutriating with dehydrated

alcohol vapours from the tower in dehydration operation. The vapours are condensed in E-06 and E-05 and the vent vapours are recovered through scrubber C-02. Vacuum can be created by vacuum P-04. (Eductor may also be considered for this duty). Product is cooled in E-09 and transferred to absolute alcohol receiving tank and then on to storage tanks.

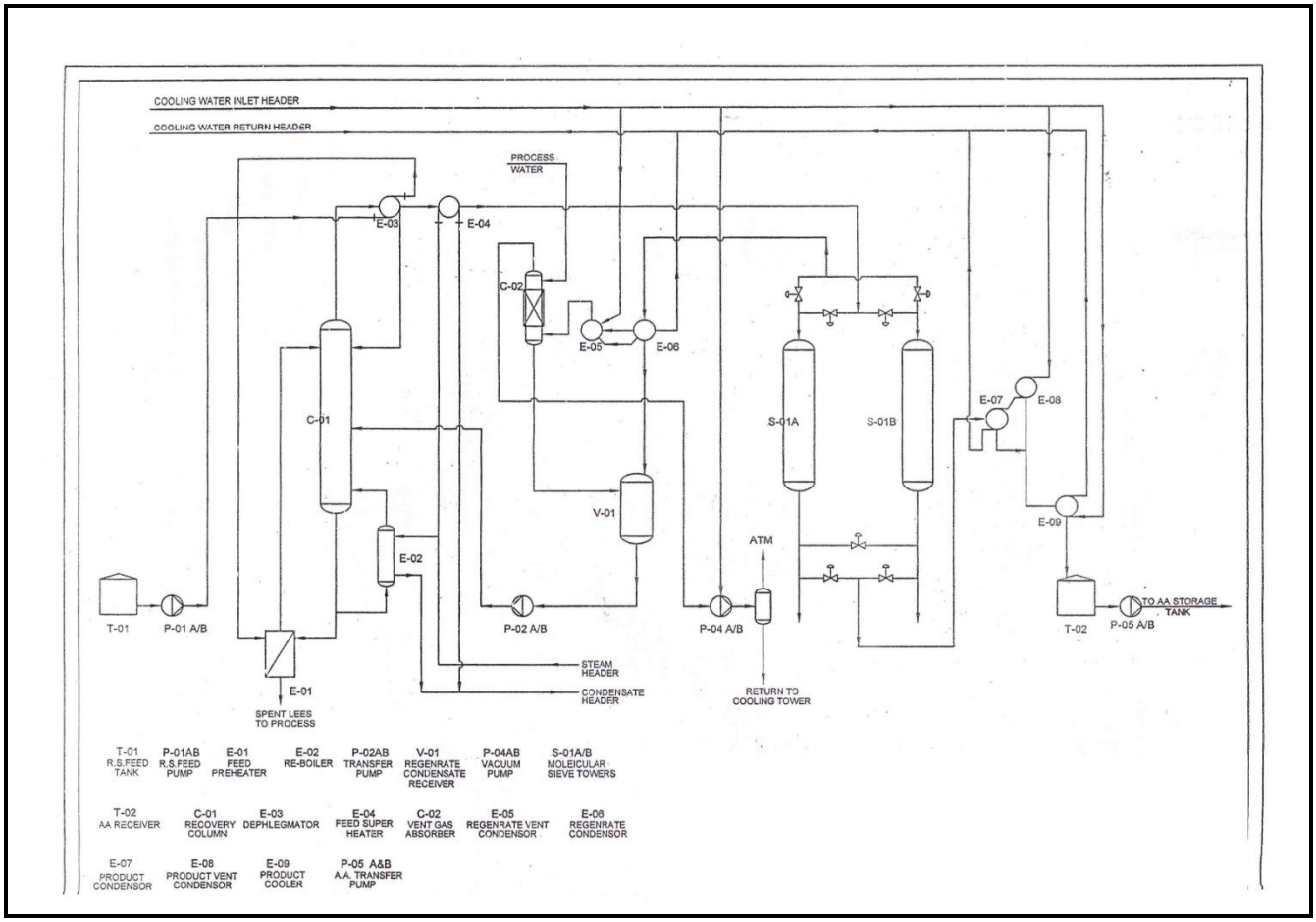

Figure 6

4.4 Facilities at the Plant

Total project area is 6 Acres. It provides adequate space for the following areas of working:-

1. Storage for raw material and finished goods.
2. Plant and Machinery
3. Storage
4. Offices
5. Toilets
6. Water storage tanks

Open space will be landscaped and trees will be planted in due course of time.

4.5 Power Requirement

Details of power consumption in the Distillery is shown in **Table 4** :

Table 4 : Power requirement

Area	**Operating Load (KW)**
Battery Limits - Fermentation and Distillation 42,000LPD	125
Battery Limit-Dehydration plant 30,000 LPD	25
Cooling tower, compressed air, water softening plant, DM Plant, Boiler and Raw water supply etc.	300
Lighting, administration etc.	50
Evaporation and Accessories	250
Contingencies	60
Total	810 KW

4.6 Steam Requirement

Total stream requirement for the proposed project is 10.0 T/hr.

4.7 Water Supply

Water required in an R.S. and ethanol plant comprises of process water in fermentation, cooling water in Fermentation, distillation, power plant and in evaporation section. Soft water is required as make up for cooling water losses. De-mineralized water is required for use in chemical and bio-chemical laboratory and power boiler. Other requirement is by way of domestic requirement.

Total Raw water requirement is 685 m^3 /day.

Table 5: Water requirement

S.No.	**Particular**	**Water Requirement (m^3/day)**
1.	Fermentation	500
2.	Soft water	360
3.	Boiler	50
Total		910 (recycling of process condensate and spent less is assumed)

5.0 SITE ANALYSIS

(i) Connectivity

The Plant site is located at Kisan Sahakari Chini Mills Ltd., Sneh Road Najibabad, Bijnor Uttar Pradesh. It is about 6.11 Km from Najibabad . The nearest railway station is Najibabad Railway Station which is at a distance of about 7.5 km from the project site. It has an easy access to raw material availability and other infrastructural facilities e.g. land, power, water, transport and communication, approach through road & access distances from the nearest highway, railway station etc. The site is well connected with communication facilities like telephone, fax, wireless and telex and as such, no constraints are envisaged in this aspect also.

(ii) Topography

The topography of the area is flat.

(iv) Climatic data from secondary sources

The average annual rainfall is 967.3 mm. The climate is sub-humid and it is characterized by hot summer, a bracing cold season and general dryness except in the south-west monsoon season. About 86% of rainfall takes place from June to September. During monsoon surplus water is available for deep percolation to ground water. There is no meteorological observatory in the record of Bareilly, which may be taken as representative meteorological condition. May and early part of June form the hottest part of the year. In May, the mean daily maximum temperature is about 40^0C and mean daily minimum temperature about 25^0C and maximum temperature rises up-to over 45^0C. With the advancement of the monsoon in June there is a appreciable drop in day temperature. January is generally the coldest month with mean daily maximum temperature at about 21^0C and the mean daily minimum is about 8^0C. The mean monthly maximum temperature is 29.4^0C and mean monthly minimum temperature is 12^0C.The air is very humid during south-west monsoon season and the rest of the period the humidity is comparatively less. The mean monthly relative humidity is69% and mean monthly evening relative humidity is 51%.Winds are generally light with a little strengthening in the summer and monsoon seasons. The mean wind velocity is 5.1 Kmph. Potential evapo-transpiration is 1402.8 mm.

(v) Social Infrastructure available

There are primary schools, dispensaries, small hospitals, places of worship in nearby area of the project site.

(vi)Proposed infrastructure

(a) Industrial Area (processing area)

It is an industrial land

(b) Residential Area (Non processing area)

Residential colony is not proposed for proposed project. The local labor will be preferred to provide employment opportunities.

(c) Green Belt

Greenbelt will be developed in 33% of the total area of the proposed project.

(d) Social Infrastructure

Proposed project will result in growth of the surrounding areas by increased direct and indirect employment opportunities in the region including ancillary development and supporting infrastructure.

(e) Connectivity

The project is well connected with Rail and Road.

(f) Industrial Waste management

The proposed plant would be based on **"ZERO EFFLUENT DISCHARGE".**

6.0 REHABILITATION AND RESETTLEMENT (R & R) PLAN

No Rehabilitation and Resettlement plan is applicable because there are no Rehabilitation & Resettlement of the people.

7.0 PROJECT SCHEDULE AND COST ESTIMATES

The project will start only after obtaining Environmental Clearance and all other required clearance and will complete after two years of commencement.
The Capital Cost of the project is 4800 lakhs.

8.0 WASTE MANAGEMENT

8.1 Liquid Effluent:

Excepting for the major and most harmful effluent (Spent wash) from the analyzer column and fermenter sludge, other effluent are quite small and do not need any specific treatment. The purge from cooling tower will probably small and do not need any specific treatment. The purge from cooling tower will probably have a maximum of 2000 ppm of dissolved solids. Floor washings will have some dissolved solids and some gritty material. Spent less is generally pure and hence most of it is recirculated to the process. Boiler blow down will have 3000 ppm of dissolved solids and can go to normal drainage system. Treatment system for the spent wash and fermentation sludge will be as follow:

Spent Less Treatment:

The spent less form Analyzer column in the distillation section after recovery of alcohol form fermented wash, after exchanging heat with some cold streams, is pumped to spent wash clarifier. The settled solids are mixed with concentrated spent wash prior to firing in the boiler.

Yeast Sludge

Yeast sludge from wash settling and washing settling tank is washed in the mud settling tank. The supernatant liquid is returned to fermentation section or to distillation whiles the sludge is mixed with the concentrated spent wash from the evaporator and burnt in the boiler.

8.2 Air Pollution:

Flue Gas and Ash

Electrostatic precipitator for dust emission control from flue gases is considered as per the guidelines of Pollution Control Board. Boiler ash thus collected is rich in potassium and can be disposed of as blending in NPK fertilizer.

8.3 Solid Waste:

Boiler ash collected from ESP is rich in potassium and can be disposed of as blending in NPK fertilizer.

The other solid wastes expected from the unit are containers, empty drums which are returned to the product seller or sold to authorize buyers after detoxification.

8.4 Noise Pollution Control:

There is no danger of noise pollution from plant. The green belt will (plantation of dense trees across the boundary) help in reducing noise levels in proposed plant as a result of attenuation of noise generated due to plant operations, and transportation.

- Earmuffs would be used while running the equipments of the plant.
- D.G sets are provided with acoustic to control the noise level within the prescribed limit.
- A high standard of maintenance will be practiced for plant machinery and equipments, which helps to avert potential noise problems.

9.0 GREEN BELT DEVELOPMENT/ PLANTATION

Green belt development in and around the project site helps in to attenuate the pollution level. About 33% (8 Acres) land area of project will be developed as green belt and it will be maintained in future also. Green belt will be developed as per Central Pollution Control Board (CPCB) Norms. The Avenue plantation will give priority to native species, and the periphery will be devoted to generation of green belt area.

- Green belt development in and around the project site will help in to attenuate the pollution level.
- Native species will be given priority for Avenue plantation.
- The periphery will be devoted to generation of green belt area.

10.0 CSR Activities

Proposed project will result in growth of the surrounding areas by increased direct and indirect employment opportunities in the region including ancillary development and supporting infrastructure. Special emphasis on Financial and Social benefits will be given to the local people including tribal population, if any, in the area. Development of social amenities will be in the form of medical facilities, education to underprivileged and creation of self help groups.

No adverse effect on environment is envisaged as proper mitigation measures will be taken up for the same.

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