PRE-FEASIBILITYREPORT

FOR

PROPOSED MOLASSES BASED DISTILLERY

HAVING 80 KLPD (RS/ENA/AA) CAPACITY

At

RANA SUGARS LTD. – Distillery Unit Belwara
VILLAGE BELWARA,
TEHSIL&DISTT.MORADABAD, UTTAR PRADESH

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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. Rana Sugar Limited (Distillery Division Belwara) is proposing to install molasses based Distillery having 80 KLPD (RS/ENA/AA) capacity at Village Belwara, Tehsil & District Moradabad, Uttar Pradesh. Molasses will be used as Raw Material which is meet from our own Sugar Mills and local nearby markets.

As per EIA Notification dated 14th Sep, 2006 and amendment dated 1st December 2009, the proposed project falls under Category "A", Project or Activity 5(g).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 consultants 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.

Rana Sugars Limited (RSL) is an integrated Sugar – Alcohol – Power manufacturing company with a present capacity to crush more than **15000**tones of Sugarcane per day, and with Co-generation facilities of 86 MW of power and existing Distillery capacity of 60 KLPD in Punjab state.

Sugar & Power Division - Punjab

The Sugar project was set up initially with a capacity of 2500 TCD along with facilities for generation of 5 MW of power at **Village Buttar Sevian, Tehsil Baba Bakala, Distt. Amritsar, Punjab**. The project went into commercial production from December 1993.

The crushing capacity of the Company was enhanced to 5000 TCD and co-generation capacity to 10 MW from November 1998. The company further set up additional facilities for generation of 10.2 MW Bagasse based co-generation power project. The entire power generation of 10.2 MW is supplied to Punjab State Electricity Board (PSEB).

Looking at the good returns from the power segment, the company further enhanced its co generation power capacity by 34 MW. The project went into power generation from September 2007. Out of 46 MW the company is exporting approx. 30 MW presently.

Sugar and Power Units – Uttar Pradesh

With over 15 years of experience in Sugar Industry with diversified operations, the promoters of the Company decided to expand their operation geographically. The State of U.P. is the largest cane grower state. Due to this the promoters set up two Sugar units at Moradabad and Rampur Districts of U.P, with a capacity to crush 5000 tones of Cane per day in each unit and co-generate 56 MW of power in both units.

The unit at Moradabad commenced its commercial production from May 2007 and unit at Rampur commenced its commercial production from February 2008.

The Moradabad Unit is spread over 90 Acres of land and offers huge scope for expansion in to completely integrated unit by setting up the Distillery for manufacturing of RS / ENA and Absolute Alcohol (AA) (Ethanol plant).

Distillery Division - Punjab

To fully diversify its activities the company set up a distillery unit with a capacity of 60KLPD capacity at **Village Loukha, Tehsil Patti; Distt Amritsar, Punjab**. The project commenced the commercial production from March 2006. The company is utilizing molasses, a byproduct of sugar and grain for the manufacture of Rectified Spirit, Ethanol and potable alcohol. The company has further entered in to IMFL segment by bottling of brand name "Original's Choice" through a bottling tie up with John Distilleries Limited. Company produces the Punjab Medium Liquor as per the Government Quota allotted and sells the same through their Sales Depots situated in various parts of Punjab and Delhi. The Distillery unit also has captive power plant of 1.60 MW to meet the power requirement of the unit.

Renewable Energy Certificates:

Global Warming has raised serious concerns and elevated the need of using the non conventional sources (Renewable Energy) for generating the power. However, Renewable Energy (RE) sources are not evenly spread across different parts of the country. On the one hand there are States (like Delhi) where the potential of RE sources is not that significant. This inhibits SERCs in these States from specifying higher Renewable Purchase Obligation (RPO). On the other hand there are States (like Rajasthan and Tamil Nadu) where there is very high potential of RE sources. In such States there are avenues for harnessing the RE potential beyond the RPO level fixed by the SERCs. However, the high cost of generation from RE sources discourages the local distribution licensees from purchasing RE generation beyond the RPO level mandated by the State Commission. The Electricity Act, 2003, the policies framed under the Act, as also the National Action Plan on Climate Change (NAPCC) provide for a roadmap for increasing the share of renewable in the total generation capacity in the country. It is in this context that the concept of Renewable Energy Certificates (REC) assumes significance. This concept seeks to address the mismatch between availability of RE sources and the requirement of the obligated entities to meet their RPO. It is also expected to encourage the RE capacity addition in the States where there is potential for RE generation as the REC framework seeks to create a national level market for such generators to recover their cost. Central Electricity Regulatory Commission (CERC) has notified Regulation on Renewable Energy Certificate (REC) in fulfillment of its mandate to promote renewable sources of energy and development of market in electricity.

The Company is eligible for REC trading and has registered all the three sugar units for REC trading.

MANAGEMENT:

The Company is managed by Board of Directors comprising 9 Directors with Shri Rana Ranjit Singh as the Chairman & Rana Inder Pratap Singh as the Managing Director. The day-to-day affairs of the Company are being looked after by Rana Ranjit Singh, Chairman with the assistance of qualified & experienced professionals in different fields such as Production, Finance & Marketing etc. Detail of management is as under:

Sr. No.	Name	Designation
1	Rana Ranjit Singh	Chairman
2	Rana Inder Pratap Singh	Managing Director
3	Rana Veer Pratap Singh	Director
4	Sh. M.P.Singh	PEDA nominee
5	Rana Karan Pratap Singh	Director
6	Sh. A. S. Sodhi	Outside Professional Director
7	Sh. S.A.S. Bajwa	Outside Professional Director
8	Sh.Baljit Singh	Outside Professional Director
9	Sh. Balour Singh	PEDA nominee
	Key Management Personnel	
1.	Manoj Gupta	Chief Financial Officer
2.	M. K. Raina	Company Secretary

TECHNICAL TEAM:

Promoters would be assisted by in house technical and financial team of professionals:

1. Ajay Inder Majithia (vice president)
2. Mr. Ram Singh Mann (Production Head)
3. Rajneesh Rastogi (Mechanical Head)

The Rana Group of Companies had been promoted by Rana Gurjit Singh, Rana Ranjit Singh and Associates.

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 andMadhya Pradesh to the southwest. It covers 93,933 square miles (243,290 km^2), 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 themost populous state 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 which 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, and religious tourist destinations, such as the Taj Mahal, Varanasi, Piprahwa, Kaushambi, Kanpur, Ballia, Shravasti, Kushinagar, Lucknow, Chitrakoot, Jhansi, All ahabad, Budaun, Meerut and Mathura.

3.2 District Moradabad

Moradabad district is one of the districts of Uttar Pradesh state of India, and Moradabad town is the district headquarters. Moradabad district is a part of Moradabad division. As of 2011 it is the second most populous district of Uttar Pradesh after Allahabad.

The district of Moradabad lies between 28°21´ to 28°16´ north latitude and 78°4´ to 79° east longitude. The district occupies an area of 3493 km^2 and has a population of 2,761,620. The city is known for its export of brass handicrafts to North America and Europe, and is also thus called "Brass City" or Peetal Nagri. It has close to four million citizens of various ethnicities and religions.

3.3 Project Site

The Plant site is located at Village Belwara, Tehsil & District Moradabad, Uttar Pradesh. It lies near Long: 78°52'12.93" East and Lat: 28°55'36.61" North and is at an Altitude of about 200 m above mean sea level. It is

well connected with Tanda through well maintained metalled roads. It is about 8 K.M. from Tandaby road. The nearest rail head is Peepalsana, which is at a distance of about 6 km from the site. Layout Plan & Google Map of the unit is given in **Fig 3.1, 3.2** respectively.

FIGURE – 3.1
LAYOUT PLAN

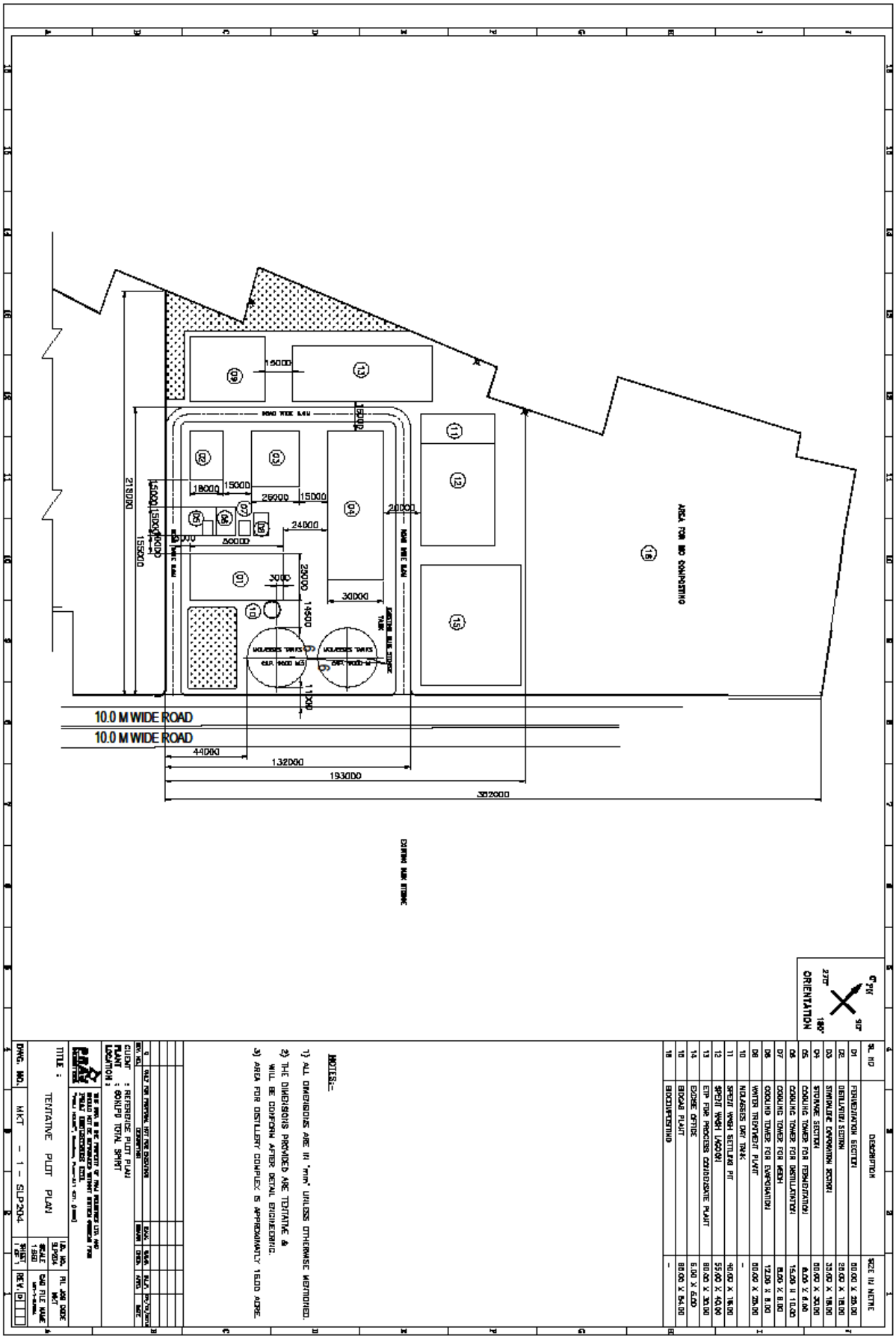
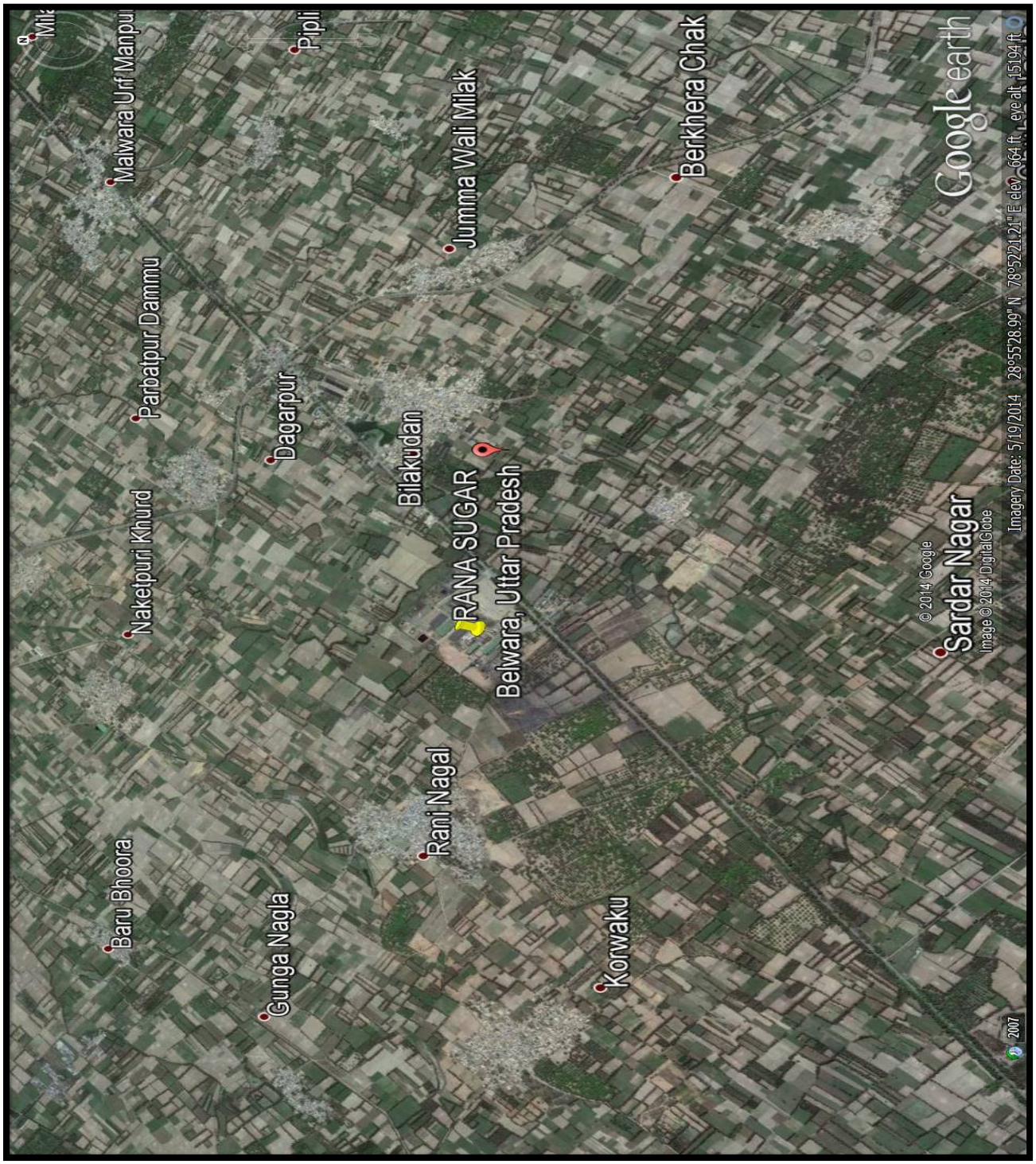


FIGURE – 3.2
GOOGLE IMAGE



4.0 PROJECT DESCRIPTIONS

4.1 General

The Rana Sugar Limited (Distillery Division - Belwara) situated at Village Belwara, Tehsil Moradabad, District Moradabad, Uttar Pradesh is about 20 Kms from Moradabad Bus Stand and about 8 Kms from Tanda. It is on Moradabad-Nainital State Highway. The unit has 25 acre land. Location details are given in **Table 4.1.** The total cost of the project is ₹57 Crores.

4.2 Raw Materials & Quantities for manufacturing of 80 KLD RS/ENA/AA

S. No.	Particular	Requirements	Source of the Raw Material & Mode of Transportation
1.	Molasses (MT/D)	**380**	Own Sugar Mill/Truck-Tankers.
2.	Fresh Water (KL/D)	**840**	Ground water
3.	Steam Requirement	**25TPH**	Own Boiler & Turbine

4.3 Products & their capacity

S. No.	Particular	Units	Capacity
1.	Rectified Spirit (RS)	**KLPD**	**80 or**
2.	Extra Neutral Alcohol (ENA)	**KLPD**	**80 or**
3.	Anhydrous Alcohol* (AA)	**KLPD**	**80**
4.	Bio-Compost	**MTA**	**9720**
5.	Liquified Carbon-Dioxide (CO2)	**TPD**	**30**
6.	Captive Power Plant	**MW**	**2.5**

Plant Site and Location

TABLE 4.1

S.No	Particulars	Details
1	**Location**	
a	Village/ Town/Plot No.	Belwara
b	Tehsil	Moradabad
c	District	Moradabad
d	State	Uttar Pradesh
e	Latitude	28º55'25.44" -28º55'46.02" North
d	Longitude	78º52'10.81" -78º52'13.26"East
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**	State Highway -Nainital-Tanda
6	**Nearest railhead**	Peepalsana (about 8 km)
7	**Nearest airport**	New Delhi (about 195 km)
8	**Nearest major city**	Moradabad (about 25 km)
9	**Nearest major settlement**	Tanda (about 8 km)
10	**Features with 10 km :**	
i)	**Defence installations**	Nil
ii)	**Archaeological important places**	Nil
iii)	**Wild life sanctuaries**	Nil
Iv)	**Reserved/Protected forest**	Nil
v)	**Industries**	General Industries like Brick Kiln, Rice Sheller etc
vi)	**Rivers**	Nil
vii)	**Hill ranges**	Nil
viii)	**State Boundary**	Nil

4.4 MANUFACTURING PROCESS DESCRIPTION :

1. Hi-Ferm Fermentation:

In HiFerm Fermentation process culture yeast is used. HiFerm Fermentation is fermentation system which offers running the process in Batch Mode.

Hi-Ferm Fermentation Plant has following sections -

Molasses Handling and Distribution:

Screened molasses from Day Storage is transferred to molasses Receiving Tank and molasses is weighed. Weighed molasses is distributed to Cell mass propagation, Fermentation and Yeast activation section.

Yeast Propagation -

Culture Yeast is grown in laboratory during plant start up. Yeast propagation section comprises of molasses Diluter and hygienically engineered Yeast Vessels equipped with heating, cooling and air sparging facility.

Pre Fermentation-

In Pre-Fermenter vessel (YAV), molasses, process water, nutrients and additive are added for activation/growth of cellmass. Filtered air is sparged as required for repairing of cell membranes and other cell components. Activated cellmass is transferred to Fermenter-I to maintain desired cellmass concentration in Fermenter.

Dilute molasses media is prepared in Yeast Vessel by recirculating media through molasses Diluter. Laboratory propagated cell mass is scaled up in series of yeast vessels. Sterile air is sparged in pasteurized and cooled dilute molasses medium for optimum growth of yeast. Temperature is maintained by recirculation cooling water through jacket of yeast vessels. Cellmass from Yeast vessel is transferred to yeast activation vessel to build up cellmass required for fermentation by cellmass transfer pump.

Fermentation -

The Fermentation process is engineered to operate in Batch Mode depending upon the quality of molasses. The purpose of Fermentation is to convert the Fermentable Sugars into alcohol. During Fermentation, Sugars are broken down into Alcohol and Carbon - di - oxide. Significant heat release takes place during Fermentation. The Fermenter temperature is maintained by forced recirculation flow through Plate Heat Exchangers. We have given a provision for spent wash recycle to Fermentation depending on solids concentration in fermented wash and molasses composition.

The carbon dioxide and foam generated in the fermentor is scrubbed in the CO2 scrubber using process water to recover the alcohol in the Co2. After complete fermentation a sample of fermented wash is analyzed for alcohol content in the sample and Wash is taken into distillation if alcohol content in wash is of acceptable level.

The fermented wash is preheated & fed to the top of the degasifying column cum Analyzer column. Steam applied at the bottom of the Analyzer column to vaporize all the alcohol present in the fermented wash. The degasifying liquid flows down to the analyzer, & the vapor for degasifying column along with the analyzer top vapor are taken to the rectifier column. The spent wash is drained from the bottom of the analyzer column. The vapor of the top of rectifier column, which contains alcohol are condensed in the condenser & again feed on the

top of rectifier column to maintain the strength of the rectified spirit. Rectified spirit containing 95% of alcohol is drawn from the top of the rectifier column. Some impure spirit is drawn as a bleed for the rectifier reflux. Fuel oil is also drawn from different zones in the rectifiers column. From the bottom of the rectifier column spent lees is drained.

2. MULTI-PRESSURE DISTILLATION PLANT :

Wash to ENA Mode: -

Following Columns will be under operation

1. Analyser Column
2. Degasifying Column
3. Pre-Rectifier Column
4. Extractive Distillation/Purifier Column
5. Rectifier cum Exhaust Column
6. Recovery Column
7. Simmering Column

Pre-heated Fermented wash will be fed to Degasifying Column. Fermented wash is stripped off alcohol by ascending vapors in Analyser Column. Rectifier vapors provide energy to Analyser Column through a Thermosyphon reboiler. Vapors of Degasifying Column are condensed and taken to Recovery Feed Tank. Analyser vapors are condensed in Analyser Condensers and are taken to Pre-Rectifier Feed Tank. Analyser Condensate is concentrated in Pre-Rectifier Column, which operates under pressure. Condensing steam provides energy to Pre-Rectifier Column through a vertical Thermosyphon reboiler. A Technical Alcohol cut of about 1-2% of Total Spirit is taken from the Pre-Rectifier column. Concentrated alcohol draw from Pre-Rectifier Column is fed to Extractive Distillation Column for purification. Dilution water is added in this column for concentrating higher alcohol at the top.

Top of this Column is condensed in its condensers and fed to Recovery Feed Tank while bottoms are fed to Rectifier cum Exhaust Column for concentration. Rectifier Column operates under Pressure and condensing steam provides energy to this column through a vertical Thermosyphon Reboiler. Technical Alcohol cut is taken out from the top of this Column while ENA draw is taken out from appropriate upper trays and fed to Simmering Column after cooling. Fusel Oil build up is avoided by taking fusel oil draws from appropriate trays.

These Fusel oils along with the condensate of Degasifying & Extractive Distillation columns are fed to Recovery Column for concentration. A Technical Alcohol cut is taken out from the top of this column. Simmering Column is operated under high reflux for better separation of methanol and di-acetyls. Final ENA product draw is taken from the bottom of this column.

Heat Integration and Energy Input Points

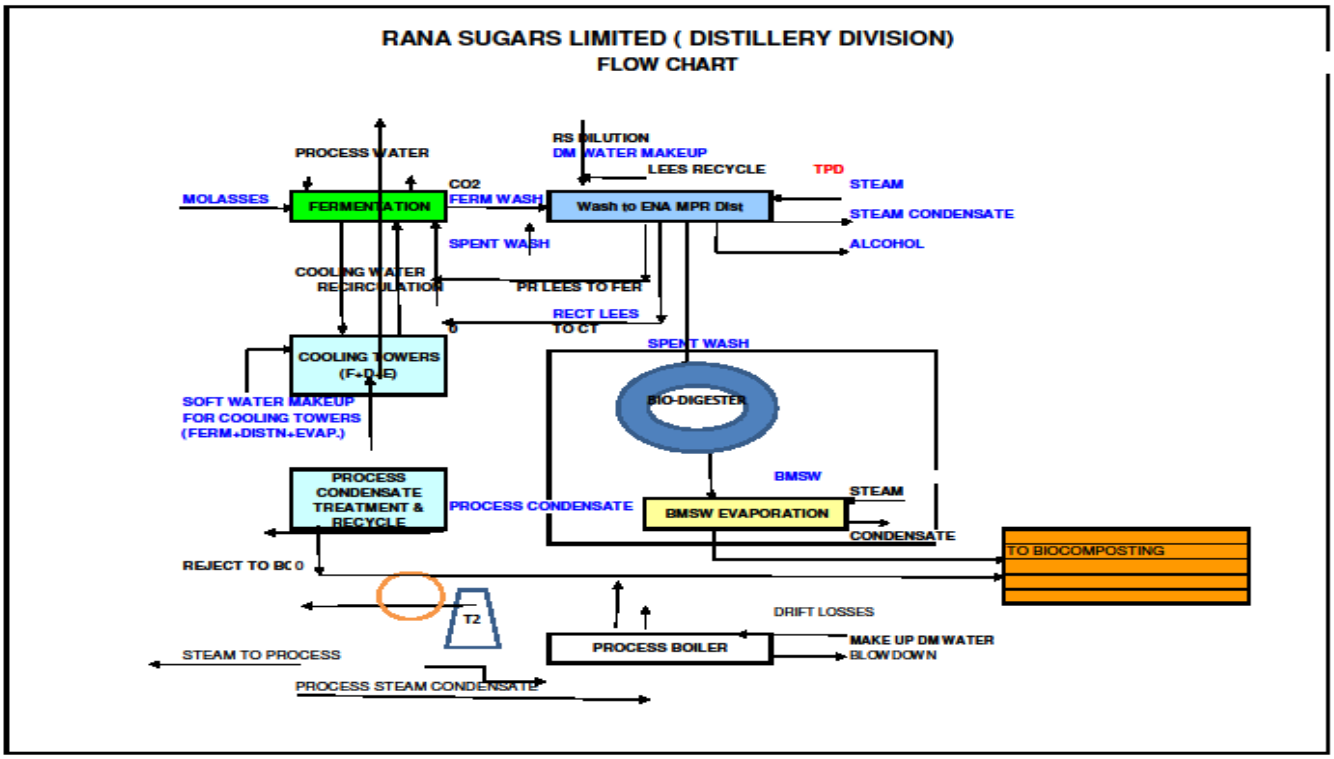
- Condensing steam through a vertical Thermo-syphon Re-boiler provides energy to Rectifier cum Exhaust Column.
- Rectifier cum Exhaust Column meets the energy requirement of Analyser cum Degasifying Column
- Supplying steam to Reboiler of the Pre Rectifier Column provides energy to Pre-Rectifier Column

- Vapours of Pre-Rectifier Column meet the energy requirement of Extractive Distillation Column and Simmering Column.
- Flashing the Steam Condensate will provide energy to Recovery Column.

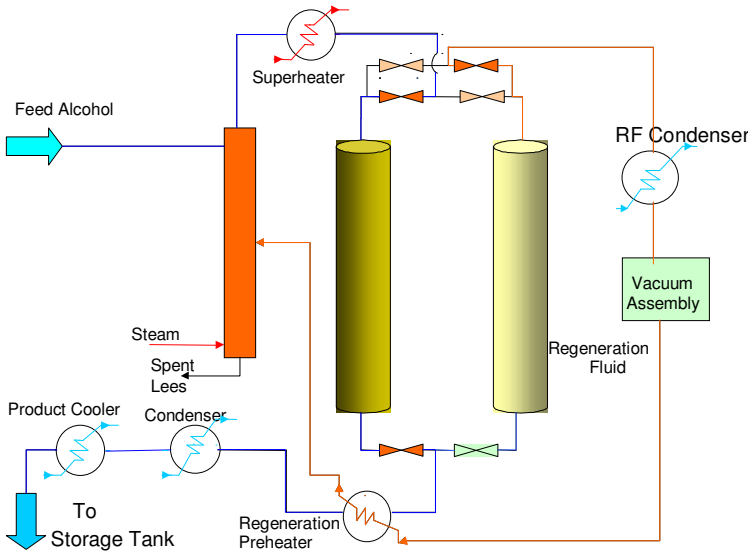
The spent wash & spent lees both are free from alcohol & are the waste water of the distillery. The Spent Wash from Distillation is taken for Anaerobic Treatment followed by Concentration in Multi-Effect Evaporation followed by Bio-Composting while the Evaporation Process condensate and entire Spent Lees are recycled back to Process and to Cooling towers as makeup water. Hence, Zero Effluent Discharge shall be maintained.

The rectified spirit which is drawn from the top of the rectifier column is stored in storage tanks. From the storage tanks the rectified spirit is either taken in to blending vats or goes for distillation to ENA plant. The spirit diluted with deminerlized water goes for blending chemicals & caramel. The final blend is bottled as per market requirements. Flow chart of manufacturing process is given in Fig.-4.1

Figure-4.1
Process Flow Chart



3. MOLECULAR SIEVE DEHYDRATION (MSDH) PLANT: ETHANOL (ABSOLUTE ALCOHOL)



Rectified Spirit containing at least 95% v/v alcohol is pumped from RS feed tank to dehydration section. Rectified spirit is preheated in Feed pre heater with the help of product vapors and then fed to top tray of Evaporator Column. The objective of the Evaporator Column is to evaporate rectified spirit. The Evaporator Column operates under pressure. Energy is supplied to the Evaporator Column through Evaporator Column Reboiler with steam condensing on shell side.

Overhead feed alcohol vapors from the Evaporator Column are then passed through Superheater where alcohol vapors are superheated. Energy for superheating is supplied by steam condensation on shell side of the Superheater.

Superheated hydrous alcohol vapors are sent to twin Adsorbent Beds. The twin Adsorbent Beds operate in cyclic manner. Twin beds are provided to allow for bead regeneration in continuous operation. While one bed is in dehydration mode, the other is in regeneration mode. Depending on feed and product specifications, dehydration-regeneration exchange takes place approximately every few minutes. The feed alcohol vapors are passed through the bed under dehydration mode. The Adsorbent Bed will absorb moisture present in feed vapors and dehydrated product alcohol vapors are obtained from bottom of the bed.

The product alcohol vapors are then passed through Regeneration Pre-heater and Feed Pre-heater for heat recovery. The Product alcohol vapors are then passed through Product Condenser where product vapors are condensed with the help of cooling water. Condensed product alcohol is collected in product receiver. The Product alcohol from Product Receiver is pumped to Product Cooler where it is cooled with the help of cooling water and then sent for anhydrous alcohol storage.

During regeneration mode, vacuum is applied to the bed under regeneration. A small amount of product alcohol vapors are purged through the bed in regeneration mode under high vacuum, to prepare the desiccant for cycle

changeover when this bed goes online. The purged alcohol vapors act as carrier for removal of moisture from the bed. These alcohol vapors along with moisture are obtained from the top of bed. These alcohol-water vapors (regeneration stream) are condensed in Regeneration Condenser, which is attached to Vacuum Eductor.

Vacuum is pulled in the system with the help of Vacuum Eductor. Regeneration stream is used as motive fluid for Vacuum Eductor. The regeneration stream coming from the Regeneration Condenser is pumped, preheated in Regeneration Preheater and fed to the Evaporator Column for recovery of alcohol. Moisture present in feed alcohol is removed from the bottom of the Evaporator Column in the form of spent lees.

After one cycle is over, the beds are interchanged, that is, the bed on dehydration mode will be switch over to regeneration mode and the bed on regeneration mode will be switch over to dehydration mode, with the help of automation system.

4.6 Facilities at the Plant

The firm has 25 acre own land where factory building, boundary wall and some other ancillary structures are proposed to be constructed. 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.

4.7 Machinery

Following machinery will be finally in position within the unit:

4.8 Power

The requirement of Power for the unit will be 2000 KWH which will be supplied by co-generation plant.

4.9 Water Supply

The total water requirement for proposed 80 KPD molasses based distillery and 2.5 MW cogeneration plant is 840 KLD shall be drawn from ground water and balance shall be recycled water. The water balance for daily consumption for proposed inclusion is presented in **Table 4.1**

Table 4.1

WATER BALANCE

ALL FIGURES IN KILO LITERS (KL)

TOTAL WATER INPUTS			TOTAL WATER OUTPUTS		
PROCESS WATER IN FERMENTATION	651	KL	STEAM CONDENSATE	384	KL
DM WATER FOR RS DILUTION	720	KL	WATER IN SPENT WASH	710	KL
DM WATER FOR BOILER FEED	468	KL	SPENT LEES (RECTIFIER)	720	KL
SOFT WATER FOR ANALYSER FLASH TANK	0	KL	SPENT LEES (PRE-RECTIFIER)	100	KL
SOFT WATER FOR VACUUM PUMP & OTHERS	100	KL	CT EVAPORATION & DRIFT LOSSES	600	KL
SOFT WATER MAKEUP FOR COOLING TOWER	600	KL	DOMESTIC CONSUMPTION	20	KL
WATER IN MOLASSES	90	KL	BOILER DRIFT & BLOWDOWN	15	KL
OTHER DOMESTIC USAGE (PROVISIONAL)	20	KL	VACUUM PUMP SEALING / PURGE	100	KL
MISC. WASHINGS (PROVISIONAL)	20	KL	MISC. WASHINGS	20	KL
BLENDING	30	KL	WATER IN PRODUCT	30	KL
BOTTLING WASHING	20	KL	WASHING WATER	20	KL
	2719	**KL**		**2719**	**KL**

RECYLCE & UTILIZATION STREAMS		
STEAM CONDENSATE RECYCLE FOR BOILER	384	KL
LEES RECYCLE FOR RS DILUTION	576	KL
SPENT LEES (PRE REC) - RECYCLE TO PROCESS	100	KL
SPENT LEES (RECT) - COOLING TOWER MAKEUP	144	KL
PROCESS CONDENSATE RECYCLE TO PROCESS & CT	583	KL
VACUUM PUMP SEALING / PURGE	95	KL
Total Recycling /Re-utilisations of water per day	**1882**	KL
TOTAL FRESH WATER INPUT	**837**	**KL**

FRESH WATER CONSUMPTION ER DAY

10.5 KL/KL

5.0 SITE ANALYSIS

(i) Connectivity

The plant is located at Village Belwara, Tehsil & District Moradabad, Uttar Pradesh. Peepalsana Railway Station is about 8 km 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) Land ownership

The proposed project having 25 acre own land.

(iii) 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 Agricultural land. CLU already obtained.

(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 molasses based distillery 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 Rs 90 Crores.

8.0 WASTE MANAGEMENT

8.1Liquid Effluent:

Spent Wash generated from the Fermentation and Distillation process will be Anaerobically treated first followed by concentration in Multi-Effect Evaporation followed by Bio-Composting. Entire Spent Lees will be recycled to Process as well as to Cooling Towers as Make Up Water. Process Condensate from Evaporation will also be neutralized, treated and recycled to Process and to Cooling towers as makeup water.

Miscellaneous Streams like Cooling Tower Blow-down will be utilized on Green Belt Development after maintaining the appropriate COC. The Boiler Blow-down may also be utilized as Cooling Tower Makeup water or for Ash Quenching use. **Hence Zero effluent discharge will be maintained in the project.**

The Domestic Waste Water / Toilet washings water will be treated in Septic Tanks followed by Soak Pits.

8.2Air Pollution:

The sources of Air pollution from the plant will be 25 TPH Biogas / Bagasse / Rice Husk / Coal fired boiler and 3 nos. DG sets of 500 KVA capacity each. The proposed Air pollution control equipment for boiler will be either Bag Filter or Electro Static Precipitator (ESP). DG sets shall be provided with adequate stack heights based on the CPCB formula for effective stack height.

8.3 Solid Waste:

Waste oil and used batteries from the DG sets are sent to authorize recyclers.

Ash from boiler will be sold to brick manufacturers or for Soil conditioning or for Land filling applications, as the case may be.

Bio-Compost (Manure) will be sold to nearby Cane farmers at reasonable prices.

Fermentor or Digester Sludge, whenever applicable, will be utilized on Bio-Composting.

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 distillery 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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