PRE-FEASIBILITYREPORT

FOR

PROPOSED 45 KLPD ABSOLUTE ALCOHOL PLANT

FOR

SUGAR MOLASSES BASED DISTILLERY

At

Majhaulia Sugar Industries Pvt. Ltd., Majhaulia,

West Champaran, Bihar

APPLICANT

Majhaulia Sugar Industries Pvt. Ltd.,

Majhaulia, West Champaran

Bihar

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 Majhaulia Sugar Industries Pvt. Ltd. is proposing to install 45 KLPD Absolute Alcohol Plant For Sugar molasses based Distillery at Majhaulia Sugar Industries Pvt. Ltd., Majhaulia, West Champaran, Bihar. 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 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 program me and to suggest remedial/precautionary measures, if any.

2.0 PROFILE OF THE COMPANY & PROMOTORS.

M/s Jay Shree Sugar Mill Prop. Jay Shree Tea & Industries Ltd situated at Majhaulia, District: West Champaran (Bihar). The management has planned to demerge the unit from Jay Shree Tea & Industries Ltd. into a new company M/s Majhaulia Sugar Industries Pvt. Ltd. having its Regd. Office at P-7, Transport Depot Road, Kolkata – 700 088, West Bengal (India). The application for necessary approval has been filed with SEBI and Stock Exchange and we expect the clearance any moment. Subsequently, the scheme for Demerger will be filed with Calcutta High Court. The proposed factory is surrounded by Rivers like Gandak, Sikhrana and Kohra. The area of West Champaran is 4355 sq.km. with an estimated population of 27.79 lakh. The density of population is 628 men per sq.km.

MSIPL management comprises the following directors:

1) Shri Rajesh Sarda
2) Shri C. L. Shukla

REGISTERED OFFICE: P-7, Transport Depot Road, Kolkata – 700 088, West Bengal (India)

FACTORY SITE: P.O. Majhaulia - 845454, District West Champaran, Bihar (India)

3.0 BASELINE ENVIRONMENTAL SETTING

3.1 The State

Bihar is a state located in East India. On 22 March 1912, Bihar was carved out as a separate province in the British Indian Empire. Since 1947, Bihar has been a state in the Indian Union.. Patna is the administrative capital of Bihar. On November 15, 2000, southern Bihar was ceded to form the new state of Jharkhand. Gross state domestic product of Bihar for the year 2013/2014 has been around 3683.37 billion INR. By sectors, its composition is: Agriculture = 22%, Industry = 5%, Services = 73%. Bihar has emerged as brewery hub with major domestic and foreign firms setting up production units in the state. Three major firms: United Breweries Group, Danish Brewery Company (Carlsberg Group) and Cobra Beer. The state is also contiguous with Uttar Pradesh to its west, Nepal to the north, the northern part of West Bengal to the east, with Jharkhand to the south. The Bihar plain is split by the river Ganges which flows from west to east. It is the 13th largest state of India, with an area of 94,163KM^2 (36,357 sq mi), equal to 6.94% of the total area of India. 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. Bihar is the 13th largest Indian state by economy, The GSDP stands at 368,337 Crores Rupees ($59.4 billion nominal GDP) as per 2013-2014. Agriculture and service industries are the largest parts of the state's economy.

The history of Bihar is one of the most varied in India. Ancient Bihar, known as Magadha, was the centre of power, learning, and culture in India for 1000 years. India's "first empire", the Maurya empire as well as one of the world's greatest pacifist religion, Buddhism arose from the region that now makes modern Bihar. Magadha empires, notably under the Maurya and Gupta dynasties, unified large parts of South Asia under a central rule. Its capital Patna, earlier known as Pataliputra, was an important political, military, and economic centre of Indian civilisation during the ancient and classical periods of history.

Bihar has a diverse climate. Its temperature is subtropical in general, with hot summers and cool winters. Bihar is a vast stretch of fertile plain. It is drained by the Ganges River, including its northern tributaries Gandak and Koshi, originating in the Nepal Himalayas and the Bagmati originating in the Kathmandu Valley that regularly flood parts of the Bihar plains. The total area covered by the state of Bihar is 94,163 km2 (36,357 sq mi). the state is located between 24°-20'-10" N to 27°-31'-15" N latitude and between 83°-19'-50" E to 88°-17'-40" E longitude.

The Ganges divides Bihar into two unequal halves and flows through the middle from west to east. Other Ganges tributaries are the Son, Budhi Gandak, Chandan, Orhani and Phalgu.

The culture and heritage of Bihar can be observed from the large number of ancient monuments spread throughout the state. Bihar is visited by many tourists from around the world, with about 24,000,000 (24 million) tourists visiting the state each year. In earlier days, tourism in the region was purely based on educational tourism, as Bihar was home of some prominent ancient universities like Nalanda & Vikramashila.

3.2 District West Champaran

West Champaran is an administrative district in the state of Bihar in India. It is a part of Tirhut Division. The district headquarters are located at Bettiah.West Champaran is known for its fluid border with Nepal. It is located just 60 km (37 mi) west of Birgunj in Nepal. West Champaran district occupies an area of 5,228 square kilometres (2,019 sq mi). West Champaran district comprises the following Sub-Divisions: Bettiah, Bagaha, and Narkatiaganj.

Blocks: Bettiah, Sikta, Mainatand, Chanpattia, Bairia, Lauria, Bagaha - 1, Bagaha - 2, Madhubani, Gaunaha, Narkatiaganj, Manjhaulia, Nautan, Jogapatti, Ramnagar, Thakraha, Bhitaha, Piprasi, Lauriya. According to the 2011 census West Champaran district has a population of 3,922,780. This gives it a ranking of 63rd in India (out of a total of 640). The district has a population density of 750 inhabitants per square kilometre (1,900/sq mi). Its population growth rate over the decade 2001-2011 was 28.89%. Pashchim Champaran has a sex ratio of 906 females for every 1000 males, and a literacy rate of 58.06%. Muslim education in deoraj (Lauriya block) is 87.12% which is highest in bihar in a particular region. In 1989 West Champaran district became home to Valmiki National Park, which has an area of 336 KM^2 (129.7 sq mi). It is also home to two wildlife sanctuaries: Valkimi and Udaypur Wildlife Sanctuary. The district is well connected by roads and railways to all major cities.

3.3 Project Site

The Plant site is located at majhaulia, West champaran, Bihar. Majhaulia is within 5 KM from nearest National Highway (NH-28). It is a Railway Station on East Central Railways and is within 1 KM from the proposed factory. The State capital, Patna is 230 KM from the proposed factory whereas the nearest big town is Bettiah (District Headquarters) at about 18 KM and major Rail Head. Majhaulia is accessible from Bettiah, Motihari, Muzaffarpur by road as well as by train also.

Figure: 1 Google Image (2 KM Buffer Zone)

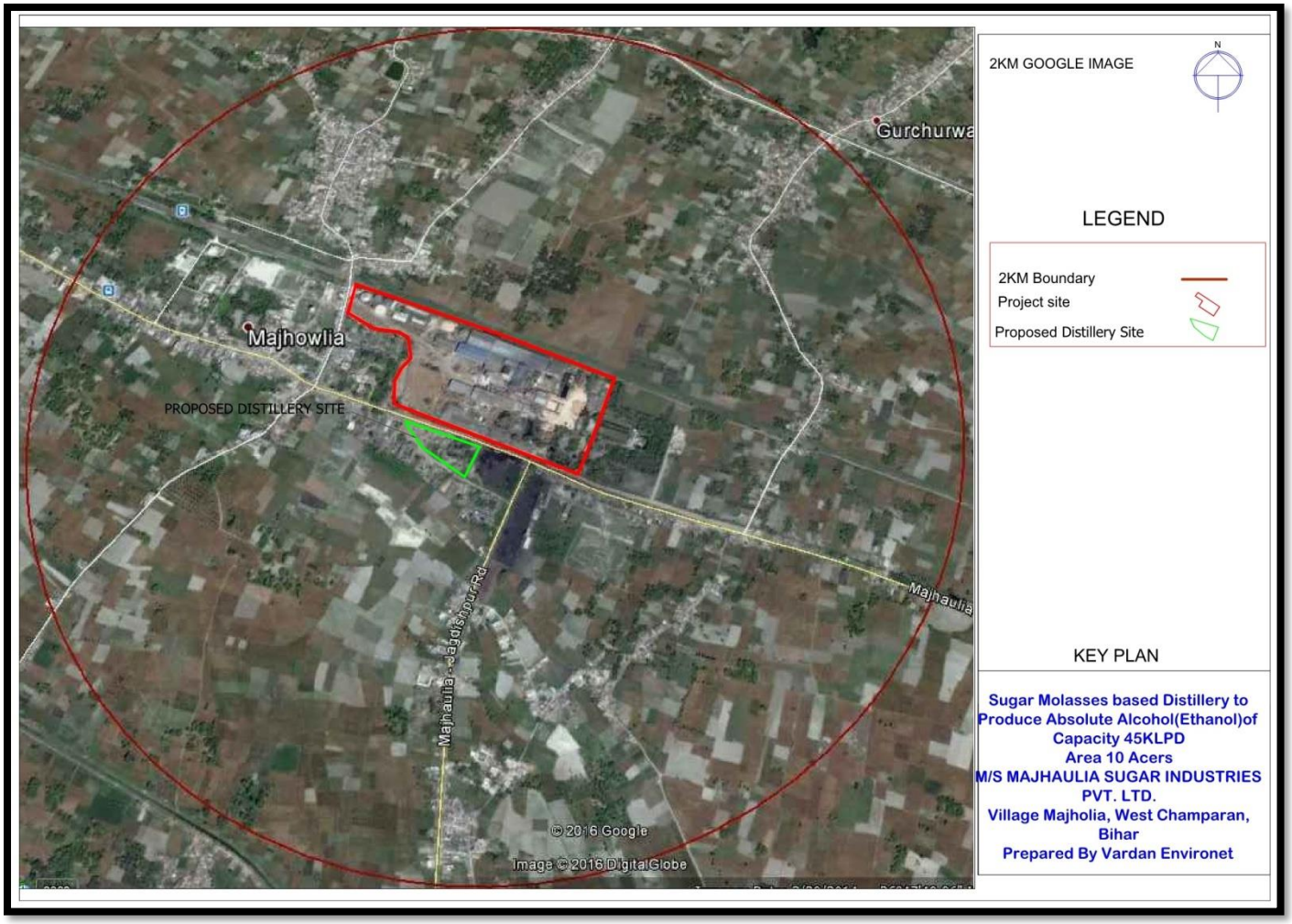

Figure- 2: Key Plan

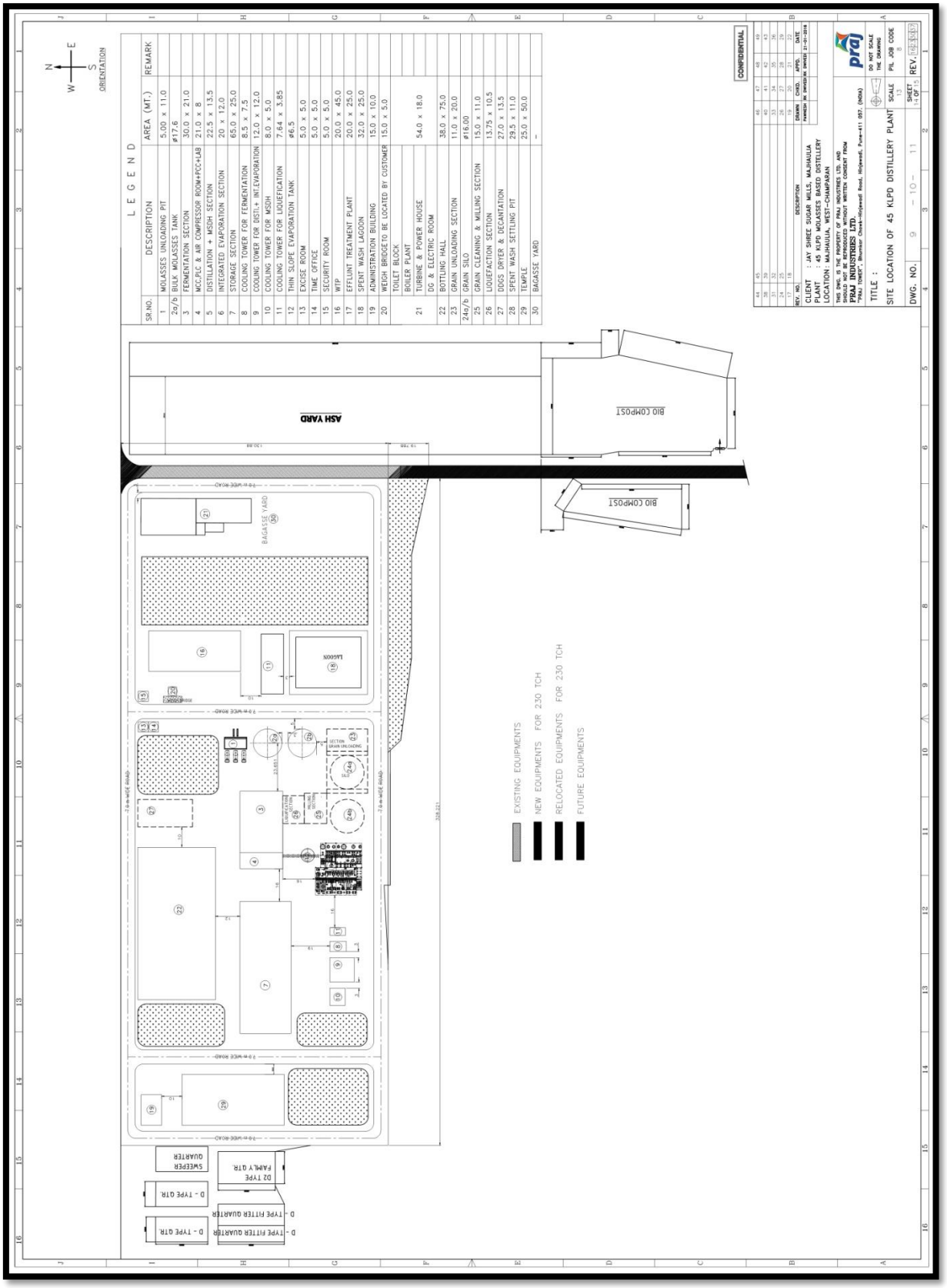

Figure: 3 Layout Plan

4.0 PROJECT DESCRIPTIONS

4.1 General

The Plant site is located at majhaulia, West champaran, Bihar. Majhaulia is within 5 KM from nearest National Highway (NH-28). It is a Railway Station on East Central Railways and is within 1 KM from the proposed factory. The unit has 10 acre land. The total cost of the project is Rs.6930.00Lakhs.

4.2 Raw Materials Requirement

Table 2: Raw Material Requirement

S. No.	Particular	Requirements	Source of the Raw Material & Mode of Transportation
1.	Molasses	**215 TPD**	Own Sugar Mill/ Truck-Tankers.
2.	Fresh Water	**440 KLD**	Ground water
3.	Steam Requirement	**11.2 TPH**	Own Boiler & Turbine
4.	Fuel	Slope: **33600Tonnes/yr** Baggase: **25000Tonnes /yr**	

Table 3: Plant Site and Location

S.No	Particulars	Details
1	**Location**	
a	Village/ Town/Plot No.	Majhaulia
b	Tehsil	Bettiah
c	District	West Champaran
d	State	Bihar
e	Latitude	26°47'49".N
d	Longitude	84°37'34.1" E
f	Toposheet No.	72B9
2	**Elevation**	83.21 mts (273 ft)
3	**Land use at the project site**	Industrial
4	**Climatic Conditions**	
	Temperature Rainfall Relative Humidity, % Wind speed, Kms/hour	Min: 4^{o}C, Max:44^{o}C 1510.4 mm (average) Min: 23%, Max:80% 10 Km (approx.)
5	**Nearest highway**	NH-28, 5.00 KM

6	**Nearest railhead**	Majhaulia Railway Station, 1.0 KM, SW
7	**Nearest airport**	Jay Prakash Narayan International Airport, Patna 130.00 KM, SW
8	**Nearest major city**	Bettiah 18KM, W
9	**Nearest major settlement**	Bettiah 18KM, W
10	**Features with 10 km :**	
i)	**Defence installations**	Nil
ii)	**Archaeological important places**	Nil
iii)	**Wild life sanctuaries**	Nil
Iv)	**Reserved/Protected forest**	No Reserved/Protected forest within 10KM of Project unit area.
v)	**Industries**	General Industries like Brick Kiln, Rice Sheller etc
vi)	**Rivers**	Nil
vii)	**Hill ranges**	Nil
viii)	**State Boundary**	Nil

4.3 PROCESS DESCRIPTION

4.3.1 MOLASSES FERMENTATION

In Hi-Ferm Fermentation process for molasses based operation, culture yeast is used. Hi-Ferm Fermentation is Fermentation system which offers running the process in fed batch mode. Hi-Ferm Fermentation Plant has following sections:

- Molasses Handling and Distribution – Screened molasses from Day Molasses Tank is fed 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 molasses diluter and hygienically engineered yeast vessels equipped with heating, cooling and air sparging facility.
- Pre Fermentation- In Pre-Fermenter vessel, molasses, process water, nutrients and additive are added for activation/growth of cell mass. Filtered air is sparged as required for repairing of cell membranes

and other cell components. Activated cell mass is transferred to Fermenter to maintain desired cell mass 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. Cell mass from Yeast vessel is transferred to yeast activation vessel to build up cell mass required for Fermentation by cell mass 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 dioxide. 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.

4.3.2 DISTILLATION – "WASH TO ENA" MODE

Following Columns will be under operation

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

Steam Consumption: 3.2 kg/lit of Total Spirit

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 in the ratio of 1:9 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.

4.3.3 DISTILLATION – "WASH TO RS" MODE

Following Columns will be under operation

1. Analyser Column
2. Degasifying Column
3. Recovery Column
4. Rectifier cum Exhaust Column

Steam Consumption: 2.2 kg/lit of Total Spirit.

Pre-heated Fermented wash will be fed to Degasifying Column. Fermented wash is stripped off alcohol by ascending vapors in Analyser Column. Vapors of Degasifying Column are condensed and appropriate TA cut is taken out from this Column. The DG Condensate is fed to Recovery Column. Analyser vapors are condensed in Analyser Condensers and taken to Rectifier Feed Tank (which acts as Pre-Rectifier Column Feed Tank in Wash to ENA mode). Rectifier Column, which operates under pressure, concentrates the condensate of Analyser Column to 95% v/v concentration. Fusel Oil Draws are taken from appropriate trays and fed to Recovery Column. Recovery Column concentrates the fusel oil streams. A suitable Impure Spirit cut is taken out from this Column. Rectified Spirit draw of 95% v/v is taken out from the upper trays of Rectifier Column and taken to storage after passing it through a cooler.

Heat Integration and Energy Input Points

- Condensing steam through a vertical Thermosyphon Reboiler 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.

4.3.4 MOLECULAR SIEVE DEHYDRATION (MSDH) FOR ETHANOL

The process drives the rectified spirit feed from rectifier column through a bed of desiccant beads. Twin beds are provided to allow for bead regeneration in continues operation. One bed is in dehydration mode while the other is regenerating. Depending on feed and product specifications, dehydration-regeneration exchange takes place approximately every few minutes. As the regeneration process releases adsorbed water together with contained ethanol, it is recycled back to the vaporizing column for reprocessing. The feed is pumped to vaporizing column, overhead vapor of which is superheated to required operating temperature and circulated to sieve bed 1 assumed in the description to be in dehydration mode. After passing through the desiccant, the vapor is condensed, cooled and sent to product storage. A small portion of the product vapor is sent, under high vacuum, through bed 2, in regeneration mode, to prepare the desiccant for cycle changeover when bed 2 goes online. The regeneration operation forces release of moisture from the desiccant, making the bed 2 ready for next cycle. The recovered low concentration vapors are condensed and recycled back to the vaporizing column. The stream (lees) from the bottom of the vaporizing column, containing a maximum of 2000 PPM of ethanol, is pumped to battery limits.

4.3.5 EFFLUENT TREAMENT

- **Raw Spent Wash Evaporation followed by consumption in Incineration Boiler**
- The Raw spent wash from the distillation section is sent to Multi Effect Evaporation Section to concentrate it from approximately 15% w/w solids to about 55–60 % w/w solids. This concentrated Raw Spent Wash is afterwards consumed in a specially designed boiler as fuel for generation of Steam along with a supplementary fuel like Coal/ Bagasse.

4.3.5.1 RAW SPENT WASH "MULTI EFFECT EVAPORATION" SYSTEM

Combination of Falling Film and Flubex System on steam

(1 FF + 2 FB + Finisher)

- The **four effect evaporation system** including finisher is designed such that on the jacket side, steam will be condensing and on the tube side Spent wash will be concentrated.
- The feed from Distillation Section is taken to the 1st Effect VLS in evaporation. The live steam shall be supplied to the shell side of the first effect and Finisher

- Vapours generated in 1st effect VLS (Vapour Liquid Separator) are used as heat source in the 2nd effect. Vapours generated in the 2nd effect are used as heat source in the 3rd effect. Vapours from finisher also used on shell side of 3rd effect. And finally vapours from 3rd effect are condensed on shell side of Surface Condenser for Evaporator. Each Calendria is provided with re-circulation cum transfer pump.
- Process Condensate from Surface condenser is collected in Process condensate tank & then fed to the Process Condensate Treatment System for further Treatment.
- Cooling water is used in the surface condensers for condensing the vapours from the last effect. The steam condensate from the first effect jacket and finisher's shell side can be recycled back to boiler as it is fresh steam condensate. The system operates under vacuum. Water-ring vacuum pumps are used to maintain a desired vacuum.

4.5.2.2 CONC. SPENT WASH INCINERATION

The concentrated Spent Wash at 55-60% w/w solids is mixed with pre-sized coal and fed to the special Incineration Boiler, where the fuel is completely burnt to generate high pressiure superheated steam at 45 kg/cm2g at about 400 deg C. This HP steam is utilized in own Turbine to generate about 2 MW captive power for own use in the Distillery.

The flue gases are passed through suitable Bag Filtration system as air pollution control devices as recommended by CPCB & MoEF, followed by adequate stack height of chimney.

Details Process flow diagrams for Distillery is attached as Annexure I.

4.4 Facilities at the Plant

Total project area is 10 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	285

Battery Limit-Dehydration plant 30,000 LPD	30
Cooling tower, compressed air, water softening plant, DM Plant, Boiler and Raw water supply etc.	325
Lighting, administration etc.	55
Evaporation and Accessories	290
Contingencies	55
Total	**1040 KW**

4.6 Steam Requirement

Total stream requirement for the proposed project is 11.2 TPH.

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. The total water requirement for proposed unit will be **1280 KLD**. After recycling, the fresh water requirement will be **774 KLD** only.

WATER BALANCE FOR 45 KLPD DISTILLERY - MOLASSES BASED
Source of Water - Borewell

S.No.	Input			Output		
	Water Input	m^3/day	Quality	Water Output	m^3/day	Remark
1	Water from Molasses	28		Water in Spent Wash	54	To Incineration boiler
2	Water to CO2 Scrubber	36	Fresh Water	Water spent Lees	207	Feed to CPU
3	Water for Molasses dilution	488	Fresh Water	Water in Eva. Process cond.	438	Feed to CPU
4	Soft water for FO decanter & heads column	20	Fresh Water	Water loss from sludge	6	
5	DM water for ENA dilution	135	Fresh Water	Water in finished product	2	
6	Soft water for vacuum pump sealing	120	Recycled Water	Water out from Vacuum pump	120	Recycled as it is in process/CT
7	Water for Floor washing	50	Recycled Water	Water out from pumps sealing	50	Recycled as it is in process/CT
8	Water for Cooling Tower make up	366	Recycled Water	Evap. and drifd loss from C.T	306	
9	Water for Lab & Misc.	24	Fresh Water	Water out lab misc. usages	24	Horticulture Purpose

10	Water make up to Boiler	33	Fresh Water	Flash losses and Boiler blow down	33	
11	Water for backwash / rejects from WTP	7	Fresh Water	Back washes/ rejects from WTP	7	To ETP / Horticulture Purpose
12				Cooling Tower Blow Down	59	To ETP / Horticulture Purpose
	TOTAL	**1307**			**1306**	

5.0 SITE ANALYSIS

(i) Connectivity

The Plant site is located at Majhaulia Sugar Industries Pvt. Ltd., Majhaulia, west champaran, Bihar. It is about 18 KM from Bettiah. The nearest railway station is Majhaulia Railway Station which at a distance of about 1.00 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 envisage in this aspect also.

(ii) Topography

The topography of the area is flat.

(iv) Climatic data from secondary sources

The average annual rainfall is 1510.4 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 raipur, 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 44^0C and mean daily minimum temperature about 24^0C 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 5^0C. 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 is 69% 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 10 Kmph.

(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 6930 Lakhs.

8.0 WASTE MANAGEMENT

8.1 Liquid Effluent:

- The proposed Molasses based distillery would be based on "Zero Liquid Discharge" (ZLD).
- Spent wash will be treated in **MEE (Multiple Effect Evaporator**), than the semisolid waste from MEE (Multiple Effect Evaporator) will be sent in specially designed boiler for incineration.
- Condensate will be treated in condensate polishing unit and will used as water in cooling tower.
- A duly lined lagoon of 30 days capacity shall be provided.
- Online effluent quality monitoring system will be installed at the outlet of the unit for measurement of the parameters flow, pH, COD, BOD & TSS etc. and transmission of online data to Bihar Pradesh Pollution Control Board and CPCB will be done

8.2 Air Pollution:

- Air pollutant from a distillery plant is basically from boiler.
- These are particulates and acidic constituents in the flue coming from fuel *i.e*. baggase.
- The particulate emissions are controlled through Electrostatic Precipitator.

- This is already provided in boiler configuration. Ash will be collected and sold to brick manufacturers.
- Also, this ash is potash rich and can be used as fertilizer.
- Online Air monitoring system for stack emission (for Particulate Matter) will be installed & transmission of online data to Bihar Pradesh Pollution Control Board and CPCB will be done.

8.3 Solid Waste

- Boiler ash collected and sold to brick manufacturers.
- Boiler ash collected from ESP is also 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% 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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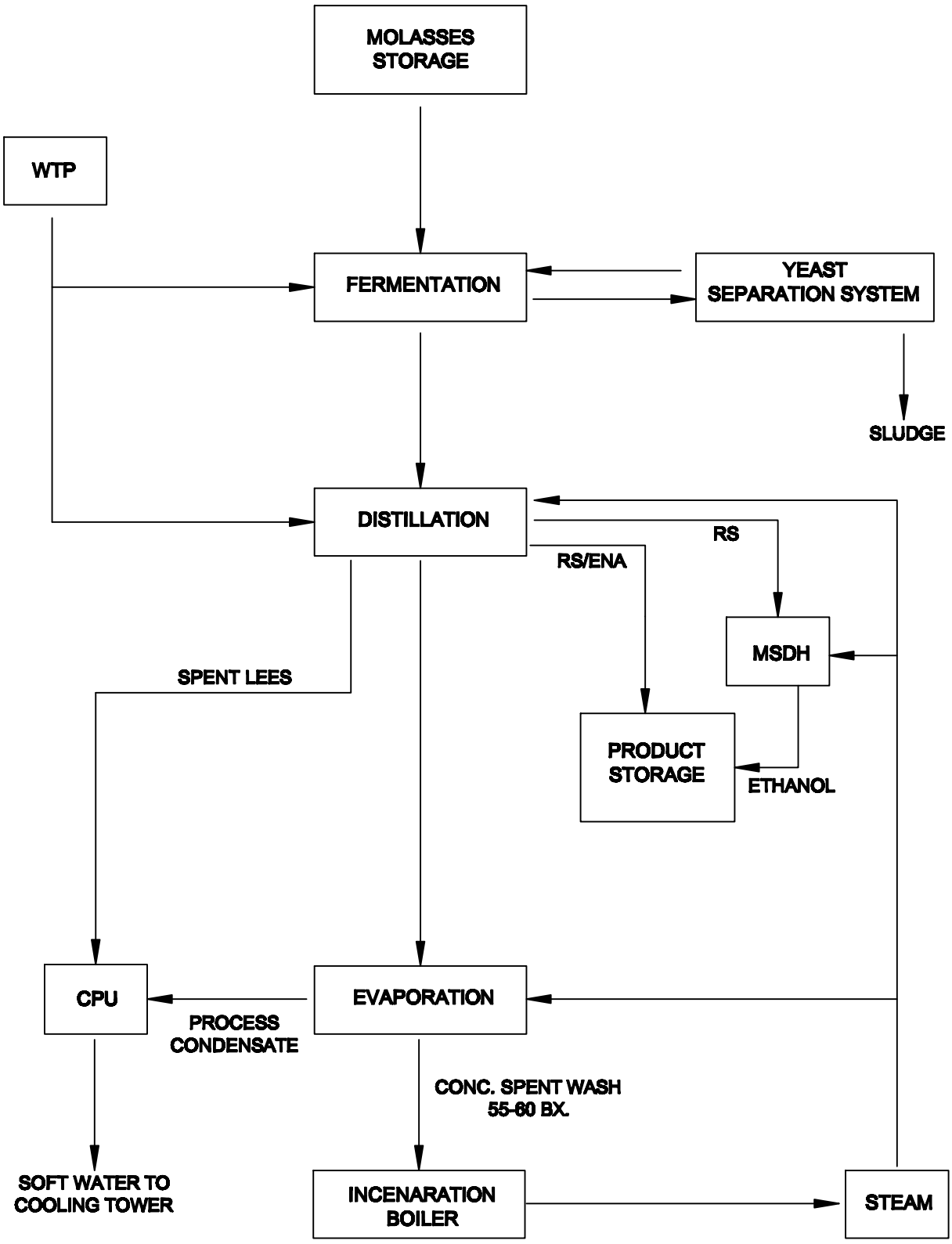
PROCESS FLOW DIAGRAM FOR DISTILLERY
(FEED STOCK-MOLASSES)

Annexure I



R S	RECTIFIED SPIRIT
ENA	EXTRA NEUTRAL ALCOHOL
MSDH	MOLECULAR SIEVE DEHYDRATION
WTP	WATER TREATMENT PLANT
CPU	CONDENSATE POLISHING UNIT

PREPARED	CHECKED	APPROVED	DATE
PAWNESH GUPTA	R K DWIVEDI	R K DWIVEDI	22-02-2016

MAJHAULIA SUGAR INDUSRIES LTD.

MAJHAULIA - WEST CHAMPARAN