PRE- FEASIBILITY REPORT

FOR

PROPOSED EXPANSION OF EXISTING SUGAR UNIT FROM 9000 TCD TO 14000 TCD AND DISTILLERY EXPANSION FROM 250 KLD TO 350 KLD WITHIN EXISTING PREMISES;

By;
M/s DSM SUGAR, ASMOLI
(A UNIT OF DHAMPUR SUGAR MILLS LIMITED)
VILLAGE-ASMOLI, TEHSIL & DISTRICT– SAMBHAL,
UTTAR PRADESH

Submitted to

MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE
NEW DELHI

PRE - FEASIBILITY REPORT

1.0 Executive Summary

1.1 Introduction

Dhampur Sugar Mills Ltd. (DSM) is an agro based industry having started their operations in the year 1933 with a 300 TCD sugar mill located at Dhampur, Uttar Pradesh in North India. The company has a successful track record of about seven decades of efficient operation. During this period, it has grown into one of the largest sugar manufacturing groups in India, owning at present five sugar mills in the State of Uttar Pradesh with a combined cane crushing capacity of more than 45,500 TCD with bagasse-based power cogeneration Units in all five Sugar Units.

With the passage of time, DSM has diversified into molasses-based chemicals manufacturing, by setting up a distillery facility for alcohol & alcohol-based chemicals, such as Ethyl acetate. Licensed/ Installed molasses-based distillery having a capacity of 200 KLPD is already in operation at Village Alhaipur, Tehsil Dhampur & District Bijnor, Uttar Pradesh for the production of Ethanol, Extra Neutral Alcohol, Rectified Spirit, Industrial Alcohol, Industrial Gases- CO2 and Bio-fertilizers.

Dhampur Sugar Mills Ltd. (DSM) established a Sugar unit in Asmoli in year 1994, futher, it was expanded to 9000 TCD in year 2006. Unit also obtained the NOC for expansion from Uttar Pradesh Pollution Control Board. Besides this, the company is having molasses-based distillery unit of 250 KLD capacities at village Asmoli, Tehsil and District Sambhal, Uttar Pradesh.

Existing Distillery Unit is also submitting regular Environmental Six Monthly Compliance to the regional office of Minstry of Environmen, Forest and Climate Change, New Delhi. The industry regularly submits consent Compliance Report of existing distillery plant to the concerned authorities (Regional Office, UPPCB). Consolidated consent to operate under section 21/22 of the Air (Prevention and control of Pollution) Act, 1981 and under Section 25/26 of the Water (Prevention and control of Pollution) Act, 1974 (as amended) has been obtained vide letter no.UPPCB / Moradabad(UPPCBRO) / CTO/both/ Bhim Nagar/2022 dated 25/03/2022 and valid from 25/03/2022 to 31/12/2023.

The existing sugar unit regularly submits consent Compliance Report of existing Sugar plant to the concerned authorities (Regional Office, UPPCB). Consent to operate Air under section 21/22 of the Air (Prevention and control of Pollution) Act, 1981 has been obtained vide letter no. 142706/UPPCB/Moradabad(UPPCB)/CTO/AIR/Bhim Nagar/2021 dated 25/12/2021 and valid from 01/01/2022 to 31/12/2023 and Consent to operate Air under Section 25/26 of the Water (Prevention and control of Pollution) Act, 1974 (as amended) has been obtained

vide letter no. 142722/UPPCB/Moradabad(UPPCB)/CTO/water/Bhim Nagar/2021 dated 31/12/2021 and valid from 01/01/2022 to 31/12/2023.

The company has now proposed integration of both sugar and distillery unit along with the expansion of Sugar unit from 9000 TCD to 14000 TCD and distillery expansion from 250 KLD to 350 KLD without change in co gen power capacity within the existing plant.

As per EIA Notification dated 14th Sep, 2006, as amended from time to time; the project falls under Category "A", Project or Activity 5(J), 5(g). Hence Form -1, PFR and proposed term of reference along with necessary document has been submitted to the EAC, Ministry of Environment, Forest and Climate Change for the grant of TOR.

Table – 1.1, Salient Features

Sr. No.	Particular	Details		
A.	Nature & Size of the project	Expansion of Existing Sugar Unit from 9000 TCD to 14000 TCD without change in existing co gen power capacity – 41 MW and Distillery expansion from 250 KLD to 350 KLD without change in existing co gen power capacity - 8.5 MW within existing industry premises at village-Asmoli, Tehsil & District– Sambhal, Uttar Pradesh		
B.	Products	**Particulars**	**Existing Quantity (TPD)**	**After Expansion (TPD)**
		Distillery Unit		
		RS/ENA/AA	250 KLD	350 KLD
		Power	8.5 MW	No change
		Sugar Unit		
		Sugar (Product)	990 MT/Day	1540 MT/Day
		Molasses (By Product)	405 MT/Day	630 MT/Day
		Bagasse (By Product)	2520 MT/Day	3920 MT/Day
		Press Mud (By Product)	405 MT/Day	630 MT/Day
		Co gen Power Plant		
		Power	41 MW	No change
C	**Location details**			
	Location / Khasra No.	Village: Asmoli, Tehsil & District : Sambhal, Uttar Pradesh, 243504		
	Village	Asmoli		
	Tehsil	Sambhal		
	District	Sambhal		
D	**Geographical extent of the project site**			
	Centre	Latitude: 28°42'21.66"N		

		Longitude: 78°32'40.41"E
	North	Latitude: 28°42'37.37"N
		Longitude: 78°32'40.52"E
	West	Latitude: 28°42'18.24"N
		Longitude: 78°32'19.46"E
	South	Latitude: 78°32'40.38"E
		Longitude : 78°32'40.12"E
	East	Latitude: 28°42'24.43"N
		Longitude: 78°32'55.94"E
	Topo sheet No (SOI)	53L/5, 53L/6, , 53L/9, 53L/10
E	**Total area of Proposed Land**	**51.39 Ha (127 Acre)**
	Green Belt / Plantation Area	16.96 Ha (@ 33 % green belt)
F	**Environmental Setting Details (with approximate aerial distance and direction from the project site)**	
	Nearest village	➢ Village Asmoli – 1.30 km in South-West direction. ➢ Village Kanpur Band – 1.60 km in South direction. ➢ Village Ramnagar – 1.32 km in South-East direction. ➢ Village Akbarpur Gahra – 1.92 km in North-West direction.
	Nearest City	Tehsil & District – Sambhal – 12.56 km in South direction.
	Nearest National / State highway	➢ 157 W (Sambhal- Joya Rd) – 1.23 Km in South-West direction. ➢ Asmoli Madhan Rd - 0.01 Km in West direction. ➢ NH-9 (Ghaziabad-Moradabad-Rampur) – 12.89 Km in North direction. ➢ SH-51 (Sambhal-Hasanpur Rd) – 10.47 Km in South-West direction. ➢ SH-51 (Moradabad- Sambhal-bahjoi Rd) – 11.82 Km in South-East direction.
	Nearest Railway Station	➢ Sirsi Mukhdampur Railway Station – 12.48 km in South-East direction. ➢ Sambhal Hatim Sarai- Railway Station – 12.54 km in South direction.
	Nearest Airport	➢ Hindon Airport – 115.57 km in West direction. ➢ Indira Gandhi International Airport– 145.55 km in West direction.
	National Parks, Wildlife Sanctuaries, Biosphere Reserves, Tiger/ Elephant Reserves, Wildlife	**None within 15 km radius.**

	Corridors etc. within 10 km radius	
	Reserved Forests (RF) / Protected Forests (PF) etc. within 10 km radius	**None within 15 km radius.**
	River / Water Body (within 10 km radius)	• Sot Nadi – 0.1 km in North direction.
	Seismic Zone	Earthquake High Damage Risk Zone-IV
	Critically Polluted Area as per CEPI-CPCB	None
G	**Cost Details**	
	Total Cost for the proposed project	Rs 15000 Lakhs for expansion. Total project cost after expansion : 57500 Lakhs.
	Cost for Environmental Protection Measures	650 Lakhs
H	Number of Working days	365 Days / Annum for Distillery unit 200 Days/Annum for Sugar unit

2. INTRODUCTION OF THE PROJECT/ BACKGROUND INFORMATION

(i) Identification of Project and Project Proponent

Dhampur Sugar Mills Ltd. (DSM) is an agro based industry having started their operations in the year 1933 with a 300 TCD sugar mill located at Dhampur, Uttar Pradesh in North India. The company has a successful track record of about seven decades of efficient operation. During this period, it has grown into one of the largest sugar manufacturing groups in India, owning at present five sugar mills in the State of Uttar Pradesh with a combined cane crushing capacity of more than 45,500 TCD with bagasse-based power cogeneration Units in all five Sugar Units.

(ii) Brief description of nature of the project

The company has now expansion of existing Sugar unit from 9000 TCD to 14000 TCD without change in existing co gen power capacity – 41 MW and Distillery expansion from 250 KLD to 350 KLD without change in existing co gen power capacity - 8.5 MW within existing industry premises.

As per EIA Notification dated 14th Sep, 2006, as amended from time to time; the project falls under Category "A", Project or Activity 5(J), 5(g). Hence Form -1, PFR and proposed term of

reference along with necessary document has been submitted to the EAC, Ministry of Environment, Forest and Climate Change for the grant of TOR.

(iii) Need for the project and its importance to the country and or region

Sugarcane is generally regarded as one of the most significant and efficient sources of biomass for bio-fuel (ethanol) production. Sugarcane offers production alternatives to food, such as feed, fibre and energy, particularly co-generation of electricity and ethanol. In India, sugar is an essential item of mass consumption and the cheapest source of energy, supplying around 10 percent of the daily calorie intake. India is the second largest producer of sugar (16.3 million-ton production in 2008-09) and India is the largest consumer of sugar in the world. As per the latest production data, MY 2016/17 sugar production is estimated at 21.9 MMT, down by 8.4 percent from the previous estimate and almost 20 percent below last year's production. As a result, total sugar supplies are limited to 32.6 MMT, which is just enough to meet the out-year consumption and stock requirements. For the third time in recent years, Indian sugar production dropped below consumption (25.6 MMT). Maharashtra and UP will contribute 22 percent and 43 percent respectively, of total production (crystal weight basis).

Dhampur Sugar- Asmoli is proposing capacity expansion from 9,000 TCD unit along with 41 MW Cogeneration Power Plant to 14,000 TCD and 71 MW Cogeneration Power Plant at Village-Asmoli, District-Sambhal, Uttar Pradesh. The proposed expansion of sugar mill plant will play an important role in upliftment of the socio economic condition of the region particularly nearby villages.

Ethanol Blended Petrol (EBP) Program is aimed at achieving multiple outcomes such as; addressing environmental concerns, reducing import dependency and providing boost to agriculture sector. Objective of 'Ethanol Blending Program' (EBP) is to:

1. Save foreign exchange by importing less petroleum
2. Support farmers by purchasing surplus produce
3. Promote industrialization to develop our country

Company is inspired with Hon'ble Prime Minister Initiative to make ATMA-NIRBHAR BHARAT. Government of India has set up target to blend 580 crore litre of Ethanol/Fuel Alcohol in petroleum by 2025. However, current supply of Ethanol is no more than 6% (3.5 crore litres) of the projected demand. Considering the huge gap in demand and supply of Ethanol for Oil manufacturing company (OMC's). Initially Government of India (GOI) made 5% ethanol blending to gasoline in 9 states and 5 union territories in January 2003. In September 2006 this mandate was extended to a few more states and Union territories. In September 2008, the GOI made blending mandatory across all the states and union territories.

In 2008 a proposal to increase the blending to 10% was made and subsequently in 2009, a proposal to increase the blending to 20%, by the year 2017, was made. It is estimated that with the current consumption of gasoline, the country needs about 1333 Million Litres of anhydrous alcohol to meet with the mandated 6% blending. On the same basis a 10% blending will need 2660 Million Litres and a 20% blending will need 5320 Million Litres of anhydrous alcohol with addition increase in demand of petrol then the requirement will be around 7000 Million litres.

Even though the decision to go with 5% blending was mandated in 2008, the program has not been fully implemented due to one reason or other. The price of ethanol was a major issue for the non-implementation of this program. In 2010 an adhoc provisional procurement price of Rs.27 per litre was fixed. As this price was less than the ENA price, many of the distilleries did not show interest in supplying the anhydrous ethanol to the Oil Marketing Companies (OMC). Even though many of the distilleries have put up facility for the production of anhydrous alcohol, these facilities are in addition to the facilities put up by them for the production of RS and ENA. When the anhydrous alcohol price was not attractive many of them decided to continue with the ENA production. Subsequently when the OMCs offered a price of Rs.36 to 37 per Litre of ethanol, there was some response and OMCs could procure about 220 Million Litres in 2012. In 2013 when OMCs floated a global tender for the supply of ethanol, the international suppliers responded with a price range of Rs. 70 to 91 per Litre of ethanol.

(iv) Demand for and Supply of Sugar in India

India's centrifugal sugar production in Market Year (MY) 2021/22 (October-September) centrifugal sugar production will grow by three percent to 34.7 million metric tons (MMT), equivalent to 31.8 MMT of crystal white sugar. Uttar Pradesh will be the largest producer of sugar in India, followed by Maharashtra.

Out-year sugar consumption is forecast to recover to 34.7 MMT, a marginal increase from the 31.8 MMT estimated for current year. Bulk consumers account for two-thirds of total sugar consumption in India. Over the last six months, moderate sugar demand from soft drink manufacturers, bakeries, hotels, restaurants, and other bulk and individual users led to a decrease in aggregate demand, matched by relatively lower sales reported by sugar mills. The disruption in the flow of currency following India's demonetization in November 2016 is the likely explanation for this dip. Most khandsari sugar is consumed by local sweet shops and gur is mostly consumed in rural households and for feed use. India's stable economy, rising incomes, growing young population, and changing consumption patterns are key drivers for food consumption.

(v) Import vs. Indigenous Production

The GOI supports research, development, training of farmers, transfer of new varieties, and improved production technologies (seed, implements, pest management) to sugarcane growers as to raise yields and recovery rates. The Indian Council of Agricultural Research conducts sugarcane research and development at the national level. State agricultural universities, regional research institutions, and state agricultural extension agencies support these efforts at the regional and state levels. Central and state governments also support sugarcane growers by ensuring finances and input supplies at affordable prices. To increase the area of cultivation and production in the country, the GOI has implemented the "Sustainable Development Fund of Sugarcane Based Cropping System Area under Macro Management Mode of Agriculture" program in various sugarcane growing states. Additionally, under the RashtriyaKrishiVikasYojana (National Agriculture Development Program), state governments have the flexibility to choose priorities for crop development projects, including sugarcane. Per media reports, the Union Budget 2017/18 (April-March) allocated about $76 million under the Sugar Development Fund to provide assistance in the form of interest to sugar mills towards working capital loans of about $980 million. The GOI projects a sugar tax collection of about $460 million. At the current exchange rate, the GOI collects $3.58 per MT of sugar produced by mills in support of the Sugarcane Development Fund (SDF), which is used to support research, extension, and technological improvement in the sugar sector.

As of April 1, 2017, the GOI will stop providing the INR 18.50/kilogram subsidy on sugar to states for selling it via public distribution system (PDS) at ration shops. A sum of about $3 billion was allocated in the Union Budget 2017/18 for clearing past claims by state governments. Earlier, the GOI continued to subsidize sugar for consumers by allowing state governments to procure sugar from the market through open tenders. The gap between open market prices and PDS sale prices/retail issue price was covered by the GOI. Following two years of deregulation of sale of sugar, the GOI in 2015 reviewed the 'decontrol of sugar marketing' and allowed states/Union Territories to either absorb the additional cost, if any, on account of handling, transportation and dealer's commission or pass it on to consumers by including it in the retail issue price (INR 13.50 per kg). The new system was adopted by 30 states/Union Territories (UTs). Industry sources expect that the sugar industry will continue to be subject to production controls by state governments, including sugar industry licensing, specified cane procurement areas for sugar mills, and cane pricing.

Ethanol is not permitted for Export Market and neither can it be imported. On the other hand, the Indian market could not meet present alcohol demand. So, they import alcohol 5-7% of total demand. As far as alcohol production is concerned, Indian market plays a vital role at

both domestic & international level. So, they require producing more alcohol to meet the demand.

(vi) Export Possibility

There is a huge demand of Indian made Sugarcane based sugar in the national and international market. Assuming normal market conditions, India may import an estimated 0.5 MMT of sugar (mostly raw) in MY 2017/18. A 20-percent drop in total supplies over the last three years will encourage imports only to augment local supplies while consumption will recover marginally to 26 MMT. The preceding statement assumes duty-free imports for commercial viability while export in forecast year is estimated to be negligible except for some sugar re-exported under the under the Advance License Scheme (ALS). Under the ALS, local sugar millers are allowed to import raw sugar duty-free against a future export commitment. Note: If sugar production is higher than anticipated, the Government of India (GOI) will likely intervene with market controls and regulate levels of imports. International sugar prices have been lower than domestic Indian prices since October 2016. Prevailing domestic sugar prices should encourage mills to sell locally, keeping Indian sugar exports less competitive. Although India mostly imports sugar from Brazil, in recent years small volumes of New Zealand and British sugar were also imported (500,000-800,000 MT), along with even smaller volumes were from Germany, the United States, Italy, the UAE and Australia. Current year sugar exports are nil except for an estimated 1.2 MMT as refined sugar re-exported under the ALS. Commercial imports are now estimated at 500,000 MT (mostly raw).

Market places such as New Delhi, Ghaziabad, Chandigarh as well as chemical industries of Uttarakhand, Uttar Pradesh and Haryana are the potential domestic market for ENA / RS as well as AA. ENA could be an exportable product.

(vii) Employment Generation (Direct and Indirect) due to the project

Due to the proposed expansion of Integrated sugar mill project in the region direct and indirect employment avenues will be created in the nearby areas. In existing sugarcane based integrated sugar mill 800 manpower is required in season and approx 680 manpower is used during off-season. After expansion of existing sugar mill approx 200 persons will be added during season. The total manpower during season will be 1000. In existing plant 680 persons are required during off-season and after expansion existing man power is sufficient to run the plant. The total manpower during off-season will be 680.

Apart from direct employment of approx 1000 people during operation, the industry will create employment for around 150 (approx) people during construction phase and numerous other indirect employment opportunities. Breakup of employment is given below:

Skilled Manpower	Semi-Skilled Manpower	Contractual Manpower
200	400	400

3.0 PROJECT DESCRIPTION

(i) Type of Project including interlinked and independent projects, if any.

This is proposal of integrated sugar and distillery unit expansion.

(ii) Location (map showing general location, specific location, and project boundary & project site layout) with coordinates

The proposed expansion will be done within the existing premises of Integrated Sugar unit at village – Asmoli, Tehsil & District – Sambhal (UP) . For EIA Study 10.0 km radial study area is covered and the same is shown on SOI Topo sheets 53L/5, 53L/6, , 53L/9, 53L/10, in the map below **Fig: 2.1**. Map showing corner of proposed project site given in **Fig: 2.2**. Latitude and Longitude of the site at four corners and in the centre given below:

Table: 1.2, Latitude and longitude of the project site

Corners	Directions	Latitude	Longitude
1st	North	28°42'37.57"N	78°32'40.50"E
2nd	East	28°42'9.12"N	78°32’50.90"E
3rd	South	28°42'7.46"N	78°32'40.12"E
4th	West	28°42'18.33"N	78°32'19.64"E
-	Centre	28°42’20.16”N	78°32’37.52”E

(iii) Land requirement

The land requirement for the proposed expansion of existing Integrated sugar unit will be approximately **51.39** Hectare (**127 Acre)** amounting to an area of **513950** sqm. Out of **51.39** Hectare of total land, **16.96** Hectare (> 33% of total plot area) will be used for green belt development and rest for plant and machinery. The item –wise land use breakup of the land within premises required for the plant and machinery of proposed expansion is tabulated in **Table 1.3.** Detailed layout plan along with the green belt is shown in **Fig: 1.4.** The Google images depicting the proposed expansion of sugar unit in **Fig: 1.2**.

Table: 1.3;
Item wise split up of the land requirement

Sr. No	Land Use	Area in Sqm	Area in Percentage
1	Roof Top (Building , Covered Shed)	**25440.5**	4.95
2	Green Belt	**169604.0**	33.00
3	Road and Paved	**24002.0**	4.67
4	Open Area	**294903.5**	57.38
	Grand Total	**513950.0**	**100 %**

(iv) Connectivity

The project site is well connected to MDR 157W which is at 1.23 km in South west direction and nearest airport is Indira Gandhi International Airport, New Delhi which is 145.55 km in South direction.

The site is suitably located with respect to availability of raw material, water, road network, skilled/semi-skilled/unskilled and professional manpower etc. All communication facilities such as telephone, telefax & internet are available in the vicinity of the plant site.

Satellite map of proposed location is given in **Fig: 1.2**.

(v) Details of alternative site considered and basis of selecting the proposed site:

Alternative sites for the proposed integrated project are not considered, because of following reasons:

1. Expansion of Integrated project will be done within the existing plant premises and no additional land will be required; therefore, no alternative site has been considered.
2. Proposed site is adequate for raw material availability and fuel.
3. Infrastructure and resources such as road, water, electricity, manpower, etc is already available for proposed expansion also.

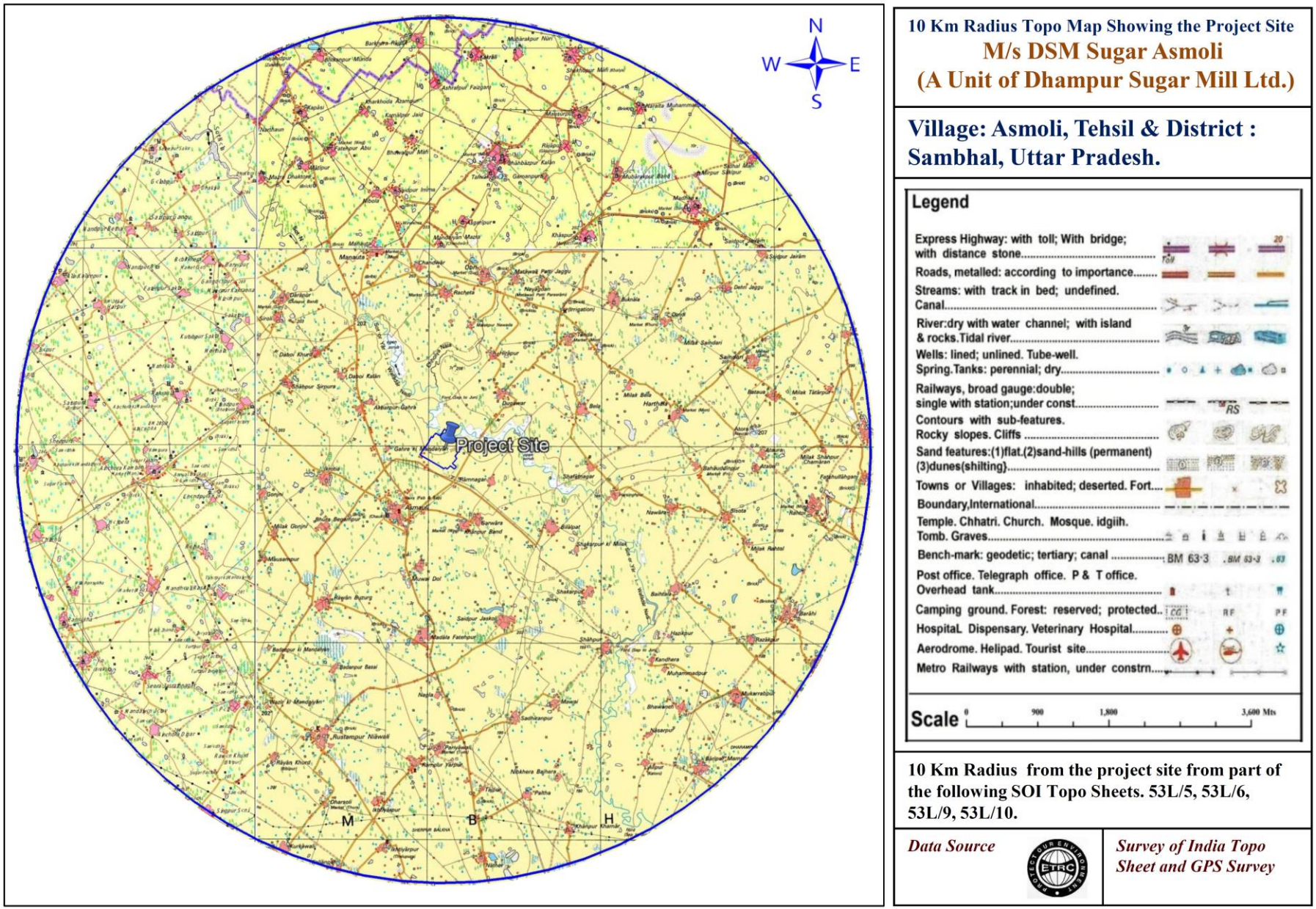


Fig : **1.1**, Topo sheet map within 10.0 km radius of the project site

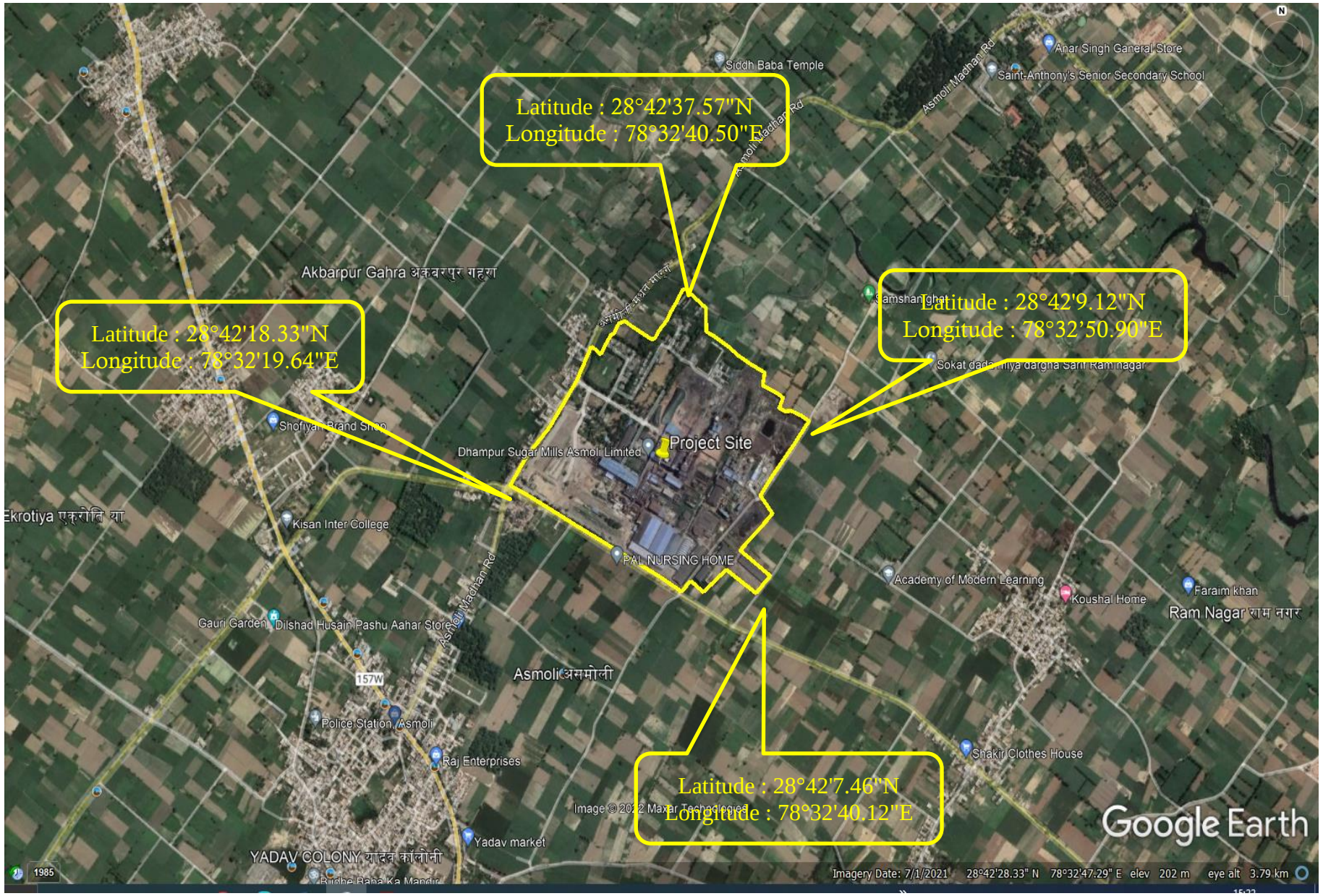
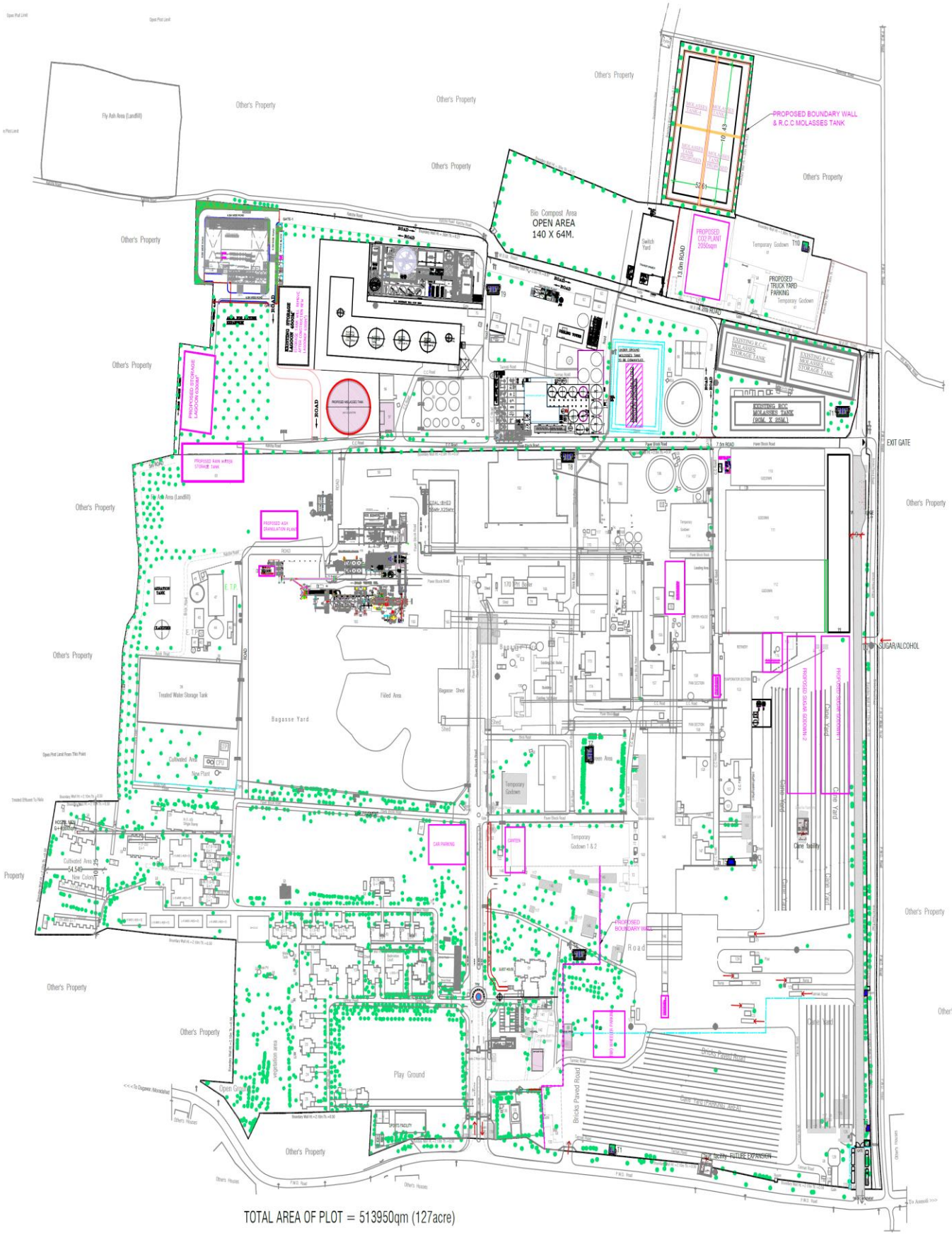


Fig: 1.2, Google Satellite Image depicting existing sugar



Fig; 1.3, Layout Plan with Greenbelt

(vi) Size or magnitude of operation

Proposed proposal is for expansion of existing integrated project sugar unit cane crushing capacity from 9000 TCD to 14000 TCD without change in co gen power generation capacity 41 MW, Distillery expansion from 250 KLD to 350 KLD without change in existing co gen power generation capacity - 8.5 MW within existing premises. Major product of distillery unit is RS/ENA/AA. Major product of project is sugar along with by-product Molasses, Bagasse and Press mud. Maximum number of operational days for sugar unit will be approx.: 200 days/Annum and Distillery unit will be 365 Days/Annum. Production details given in Table **1.4,** below:

Table: 1.4, Products and by product details

Product and its Quantity	Existing	After Expansion
Distillery Unit		
RS / ENA / AA	250 KLD	350 KLD
Sugar Unit and Co gen Power Plant		
Sugar Cane Crushing	9000 TCD	14000 TCD
Sugar (Product)	900 MT/Day	1680 MT/Day
Molasses (By Product)	405 MT/Day	630 MT/Day
Bagasse (By Product)	2520 MT/Day	3920 MT/Day
Press Mud (By Product)	405 MT/Day	630 MT/Day
Co gen Power Plant		
Power	41 MW	No change

(vii) Project Description with Process Details after Expansion

Technology and Process Description

a. Sugar manufacturing process involves stages as mentioned below

1. Extraction of juice: The sugarcane is passed through devices like knives for cutting the stalks into chips before being subjected to crushing in a milling tandem comprising 4 to 6 three roller mills. Fine preparation with its impact on final extraction, is receiving special attention &shredders &particularly the fibrizers are gaining popularity. The mills are of modern design, being equipped with turbine drive, special feeding devices, efficient compound imbibitions systematic In the best milling practice More than 95% of the sugar in the cane goes into the juice, this percentage being called the sucrose extraction or more simply the extraction. A fibrous residue called bagasse with a low sucrose content is produced about 25 to 30% of cane, which contains 45 to 55% moisture.

2. Clarification:

The dark green juice from the mills is acidic (pH 5.3 -5.4) &turbid, called raw juice or mixed juice.

The mixed juice after being heated to 68^{O}C to 72^{O}C is treated with milk of lime for removal of impurities in suspension in a continuously working apparatus. The treated juice on boiling fed to

continuous clarifier from which the clear juice is decanted while these settled impurities known as mud dissent to the field as fertilizer. The clear juice goes to the evaporators without further treatment

3. Evaporation

The clarified juice contains about 85% water. About 75% of this water is evaporated in vacuum multiple effects consisting of a succeeding (generally five) of vacuum boiling cells arranged in series so that each succeeding body has higher vacuum. The vapours from the final body go to condenser. The syrup leaves the last body continuously with about 65% solids &35% water.

4. Crystallization

The syrup is being sent to the pan station for crystallization of sugar. Crystallization takes place in single-effect vacuum pans, where the syrup is evaporated until saturated with sugar. At this point 'seedgrain' is added to serve as a nucleus for the sugar crystals &more syrup is added as water evaporates.The growth of the crystals continues until the pan is full. Given as killed sugar boiler (or adequate instrumentation) the original crystals can be grown without the formation of additional crystals, so that when the pan is just full, the crystals are all of desired size &the crystal &syrup form a dense mass known as 'massecuite'. The 'strike' is then discharged through a foot valve into a crystallizer.

5. Centrifugation

The massecuite from crystallizer is drawn into revolving machines called centrifuges. The perforated lining retains the sugar crystals, which may be washed with water if desired. The mother liquor 'molasses' passes through the lining because of the centrifugal force exerted & after the sugar is 'Purged' it is cutdown leaving the centrifuge ready for another charge of massecuite. Continuous centrifuges may purge low grades. The mother liquor separated from commercial sugar is again sent to pan for boiling and re-crystallization. Three stages of recrystallization are adopted to ensure maximum recovery of sugar in crystal form. The final molasses is sent out the factory as waste by product unsuitable for recovery of sugar under commercial condition from economical point of view.

It may be noted that the expansion will be achieved adding the following equipment/machinery :–

- Stabilization of crush rate by addition of one new mill with Tandum
- Boilers and Turbine
- Boiling House
- Pollution Control Devices like ETP, ESP, etc.

DMP Process (Defco melt phosphotation with ion exchange)

- The ion exchange process in the refinery is a continuous process where by sugar liquor is passed through a resin bed & colour is trapped within the bed. However a bed of resin

becomes saturated with colour after some time. At this time the current bed in production is terminated & a new bed is brought on line. The saturated bed must be regenerated.

- The liquor needs sufficient contact time with the resin for effective colour removal. Flow rate in relation to the amount of resin present is important.
- The lead resin bed obviously always takes the major colour impact. The trail bed always takes a lighter load.
- The beds are then washed with water to remove any traces of the caustic brine.
- The bed is sweetened on again in preparation for the next production run.

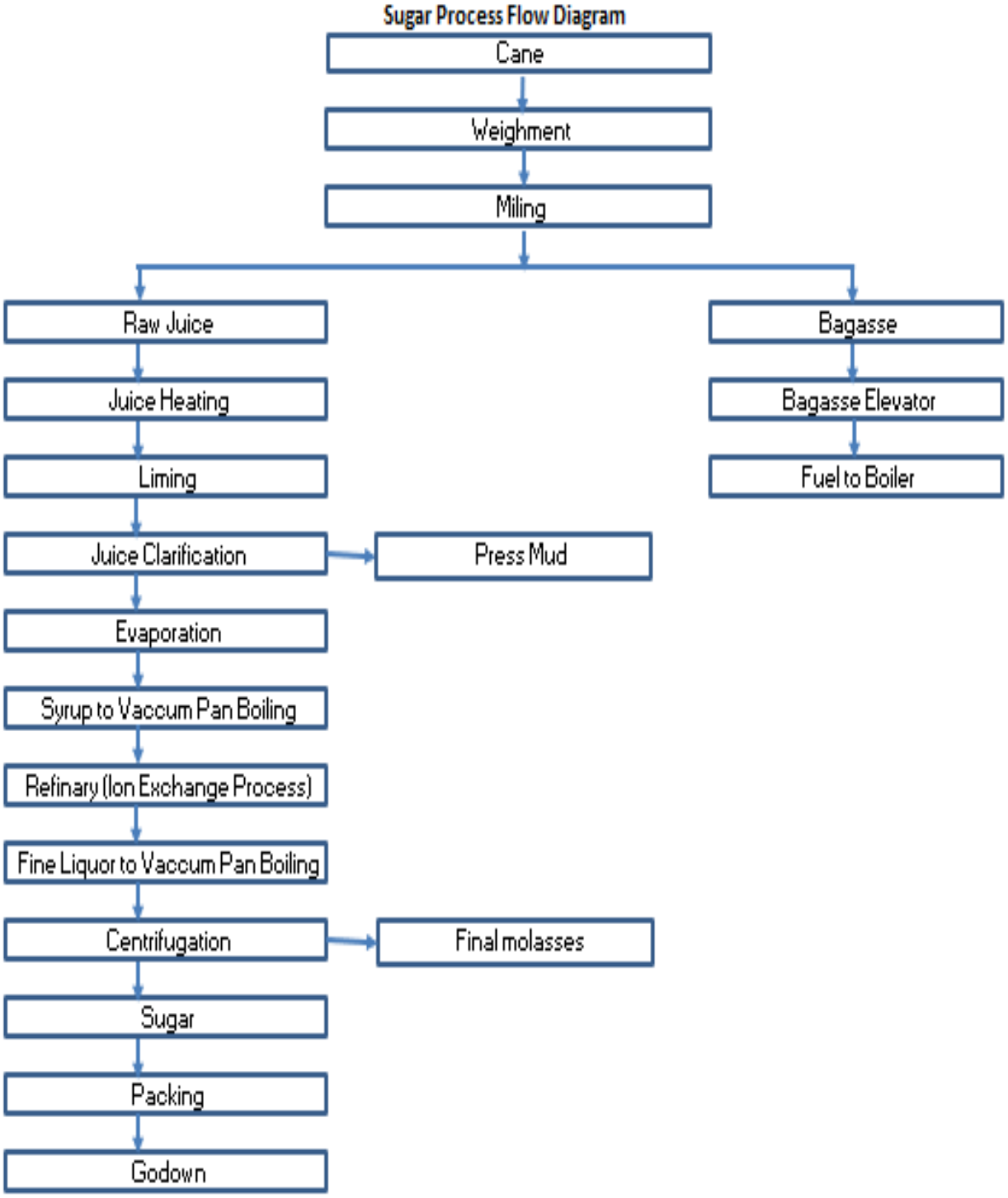


Fig: 1.5, Flow diagram of Sugar Production

b. Power Co-generation (41 MW)

Existing three boilers of capacity 170 TPH, 70 TPH & 50 TPH. No additional boiler will be install for proposed expansion Existing Turbine will be utilised to generate the increased quantity after expansion.

The steam turbine operates on basic principles of thermodynamics. After leaving the boiler, superheated vapour enters the turbine at high temperature and high pressure. The high heat/pressure steam is converted into kinetic energy using a nozzle (a fixed nozzle in an impulse type turbine or the fixed blades in a reaction type turbine). Once the steam has left the nozzle it is moving at high velocity and is sent to the blades of the turbine. A force is created on the blades due to the pressure of the vapour on the blades causing them to move. A generator or other such device can be placed on the shaft, and the energy that was in the vapour can now be stored and used. The gas exits the turbine as a saturated vapour at a lower temperature and pressure than it entered with and is sent to the condenser to be cooled (During off season) . During Crushing season after de-superheating the exit steam from Power Turbine is sent to evaporator to evaporate juice and its condensate return to boiler.

41 MW co-generation plant consists of a low pressure water tube steam boiler extraction cum condensing steam turbine. Fuel in the steam boiler will be burnt with the help of air in the boiler furnace. Water will be circulated in the boiler drum and tubes thus getting heated by the flame burning in the boiler furnace. Water comes out of the boiler drum located at the top of the boiler as steam. Flue gases rise in the boiler furnace and come in contact with the steam coming out of boiler drum.

Steam after coming in contact with flue gases gets heated up further thus getting superheated.

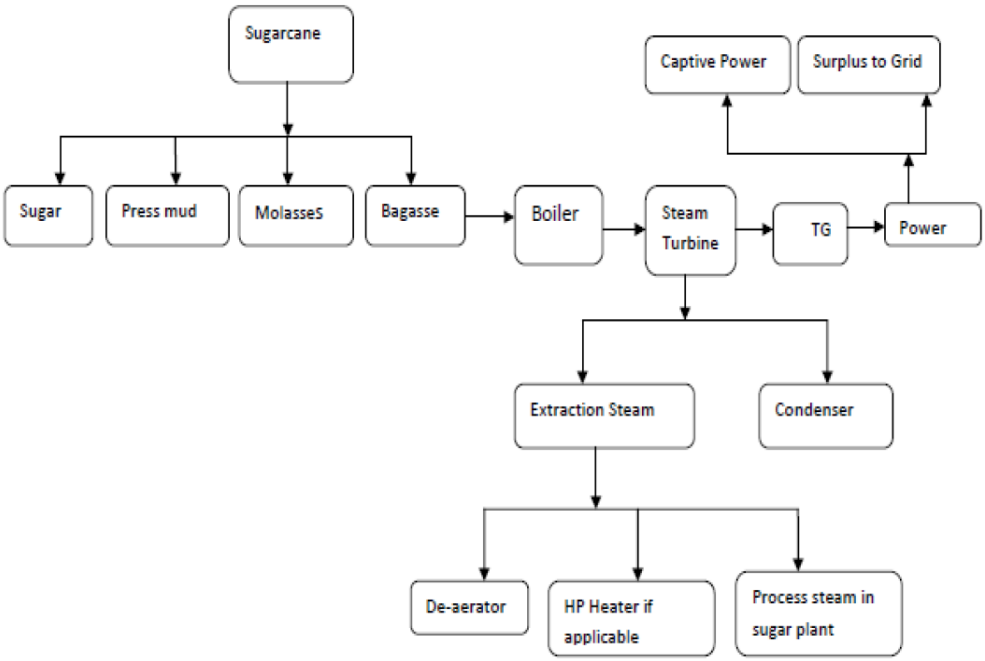


Figure - 1.6: Process flow chart for co - generation power plant

c. Distillery Manufacturing Process :

Fermentation - Sugar Syrup is the chief raw material used for production of alcohol. Sugar Syrup 27.7 % fermentable sugar. During the fermentation, yeast strains of the species Saccharomyces cerevisiae, a living microorganism belonging to class fungi converts sugar present in the Sugar syrup such as sucrose or glucose in to alcohol. The continuous fermentation process involves addition of fresh nutrients medium either continuously or intermittent withdrawal of portion of nutrient for recovery of fermentation products. In continuous process, fermenter is in constant usage with little shut down and after initial inoculation of yeast culture, further inoculation is not necessary.

Distillation- After fermentation, the next stage in the manufacturing process is to separate alcohol from fermented wash and to concentrate it to 95%. This is called Rectified Spirit (RS). For this purpose, method of distillation is employed. After separation of alcohol, the remaining part is the effluent of the process i.e. spent wash and spent lees.

Re-distillation to manufacture Extra Neutral Alcohol (ENA)

ENA is prepared by re-distillation of the rectified spirit (RS) for the removal of impurities like higher alcohols, aldehydes and methyl alcohol. This is done by, remixing rectified spirit with soft water and distilling it in the ENA column.

Anhydrous Alcohol (AA)

Anhydrous alcohol is an important product required by industry. As per IS specification it is nearly 100% pure or water free alcohol. Alcohol as manufactured by Indian distilleries is rectified spirit, which is 94.68% alcohol. It is not possible to remove remaining water from rectified spirit by straight distillation as ethyl alcohol forms a constant boiling mixture with water at this concentration and is known as azeotrope. Therefore, special process for removal of water is required for manufacture of anhydrous alcohol.

The various processes used for dehydration of alcohol are as follows

i) Azeotropic Distillation

ii) Molecular Sieves

iii) Pervaporation / Vapour permeation system.

We will use Molecular Sieves process for dehydration of alcohol.

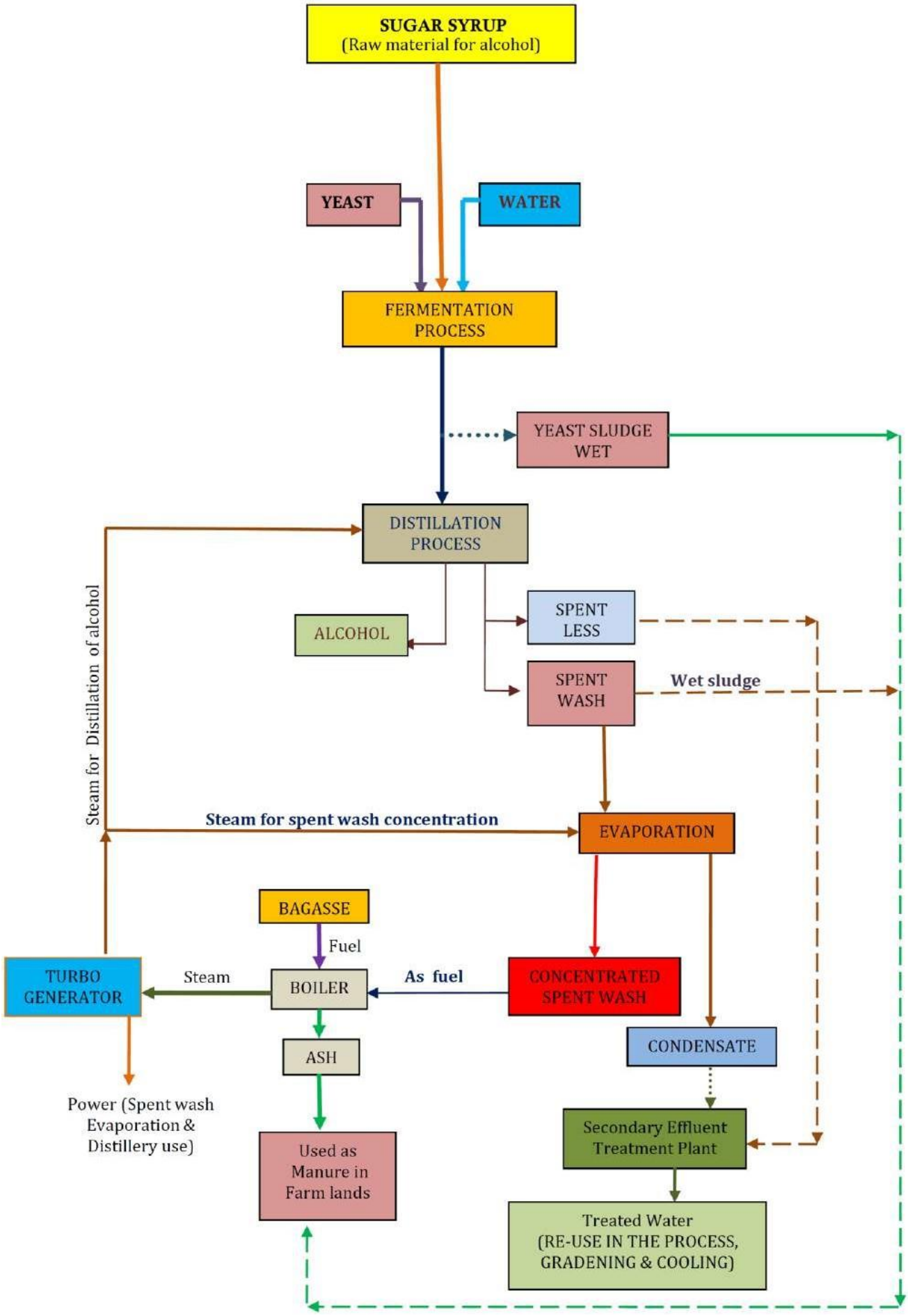


Fig : 1.7 : Distillery Process Flow Chart

(viii) Raw material required along with estimated quantity, likely source, marketing area of final products, mode of transport of raw material and finished product.

(a) Sugar Cane

Sugar Cane will be the basic raw materials for Sugar manufacturing industry. The total requirement of raw material (Sugar Cane) for the sugar industry after expansion will be 14000 TCD. For the existing setup sugar cane requirement is 9000 TPD. Additional 5000 TCD sugar cane can be easily available from local market for the proposed expansion of project as the industry is situated in good sugar cane growing area. Total raw material requirement (Sugar Cane) after proposed expansion will be 14000 TCD.

(b) Distillery

Molasses is the major raw material for distillery unit. Molasses will be procured from the sugar division of own integrated industry via Pipeline. Molasses requirement after expansion will be 1590 TPD.

Table: 1.5:
Raw Material Consumption for existing and proposed expansion in Integrated project

Sr. No.	Particulars	Existing	Proposed Expansion	Total after expansion	Source of the raw material & mode of transportations
1.	**Sugar Unit**				
a.	**Sugar Cane**	**9000 T**	**5000 T**	**14000 T**	From reserve area by tractor trolley/trucks
b.	**Lime**	18.0 T	10.0 T	28.0 T	Will be sourced from Lime Stone mines and transported by trucks
c.	**Sulphur**	5.4 T	3.0 T	8.4 T	Will be sourced from local market and transported by trucks
d.	**Caustic Soda**	0.45 T	0.25 T	0.70 T	Will be purchased from Caustic Soda Manufacturers and will be transported by trucks
e.	**Common salt**	1.8 T	1.0 T	2.8 T	Will be sourced from Open Market.
2.	**Distillery Unit**				
a.	**Molasses**	**1136 T**	**454 T**	**1590 T**	Molasses is being / will be sourced from own sugar unit and Other nearby Sugar mills.
b.	**Other Chemical**				
	Sulphuric Acid	375 kg/D	150 kg/D	525 kg/Day	Nearby Market by Truck. 15 Days storage
	Sodium	600 kg/D	240 kg/D	840 Kg/Day	

	Hydrooxide (Caustic)				will beprovided.
	Enzymes	200 kg/D	80 kg/D	280 kg/Day	
	NH2-CO–NH3 (Nutrient : 46% N2	750 kg/D	300 kg/D	1050 kg/Day	
	Antifoam Agent	62.5 kg/D	25 kg/D	87.5 kg/Day	

(viii) Resources optimization/ recycling and reuse envisaged in the project, if any, should be briefly outlined.

Water as a resource is being / will be recycled at each possible step of the process and latest technology and methodology will be adopted to conserve and reuse the resources. 70 % of Cane water will be used within process.

(ix) Availability of water it's source, energy /power requirement and source should be given.

(a) Water Requirement

i. Industrial:

Fresh water requirement after proposed expansion of integrated project project will be 3052 KLD. Existing distillery unit fresh water requirement is approx. 2000 KLD (@ 8 KL / KL of product) and will be increased to 2072 KLD after expansion (5.92 KL / KL of Products).

For sugar process, fresh water requirement after expansion will be 900 KLD. Existing sugar process requirement is 820 KLD. Fresh water requirement will be met through Ground water. Approx 70 % recycling of water will be done to ensure the reduction in fresh water consumption.

ii. Domestic water

Existing integrated unit water requirement is 70 KLD and for proposed expansion 10 KLD additional fresh water requirement. Total domestic water requirement after proposed expansion will be 80 KLD. Water requirement for the proposed project will be met from ground water. Permission for abstraction of ground water has been obtained from ground water Department, Uttar Pradesh. Water requirement for the project is given in **Table: 1.6**.

Table: 1.6;
Water requirement for proposed expansion project

Sr. No.	Particulars	Existing KLD	Proposed KLD	Total KLD	Source
1.	**Industrial (Distillery)**	**2000**	**72**	**2072**	Ground Water through Tube-well.
2.	**Industrial (Sugar) Season**	**820**	**80**	**900**	
	and				
3.	Domestic water requirement	**70**	**10**	**80**	
	Grand Total	**2970**	**162**	**3132**	
	Waste Water generation (Sugar Unit)	**1800**	**1000**	**2800**	Maximum effluent generation is being and will be @ 0.2 KL / Ton of Cane Crushed.

Water Balance at proposed expansion capacity is given in Fig: 1.7.

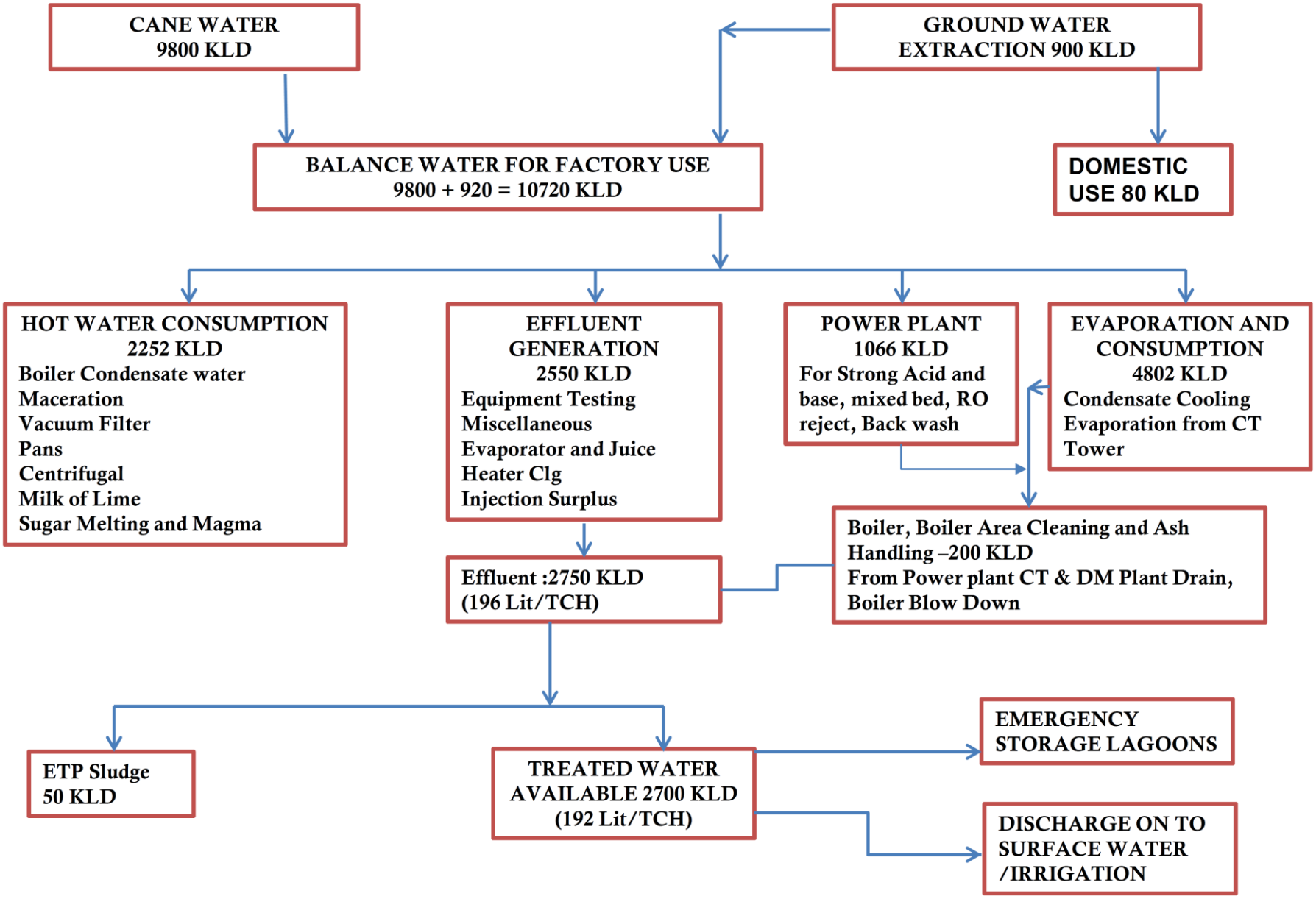


Fig: 1.7: Water Balance Flow Chart after expansion of existing sugar mill

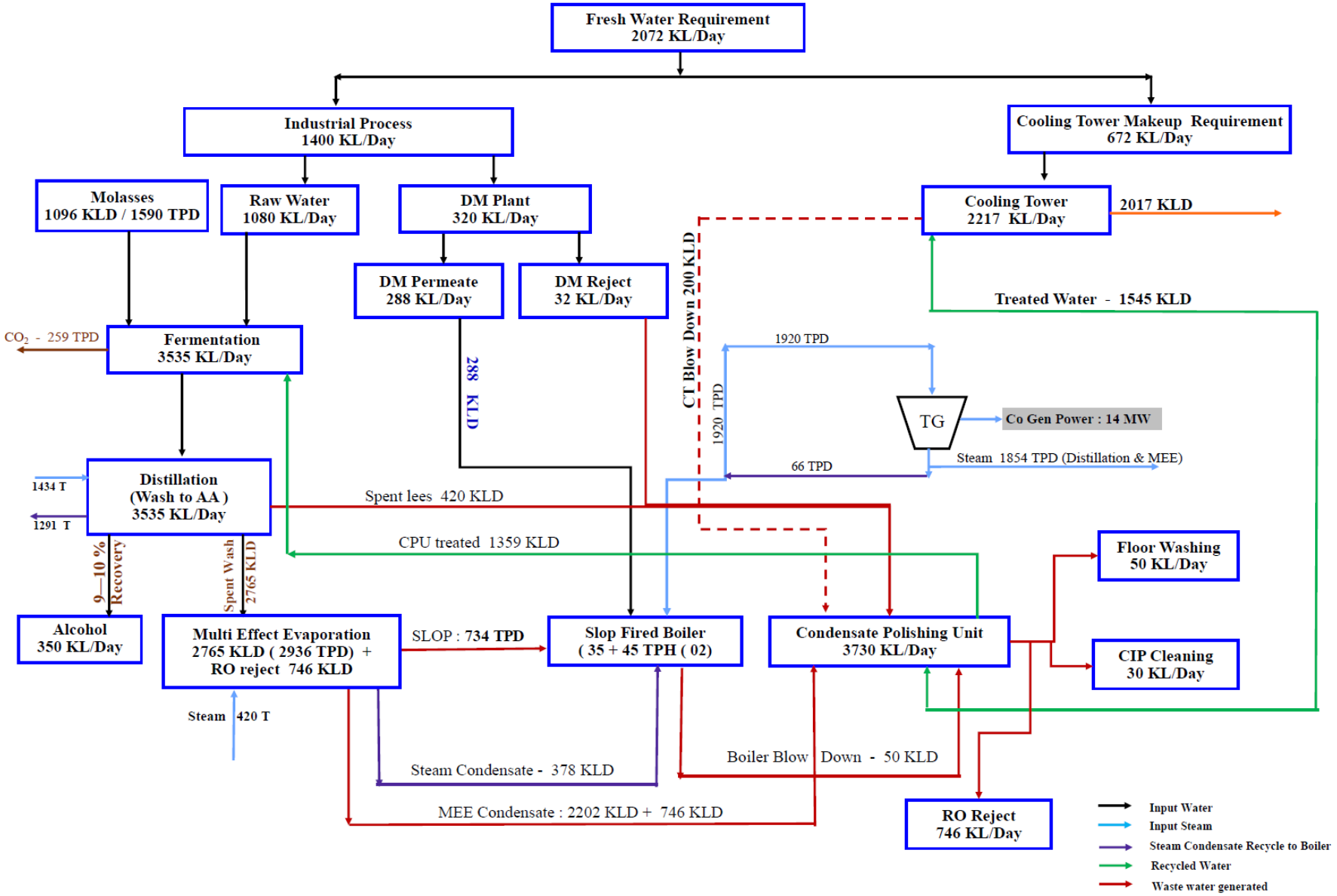


Fig: 1.8: Water Balance Flow Chart after expansion of existing distillery unit

(b) Steam Requirement:

Steam generated from the boilers is being / will be utilized in the sugar manufacturing process which will be for own consumption and generating power for grid supply. Existing steam requirement of sugar unit is 165 TPH and after expansion it will be 282 TPH. Three existing boilers of capacity 170 TPH, 70 TPH & 50 TPH has been already installed in sugar plant. No additional boiler will be install for proposed expansion of cane crushing capacity.

In Distilery unit, existing steam requirement is 55 TPH, after expansion steam requirement will be 77.5 TPH. Steam requirement is being / will be met from existing slop fired incineration boiler of capacity 35 TPH and 45 TPH. For proposed expansion no additional boiler is proposed in Distillery part also. The steam requirement for different purposes for proposed expansion will be given **Table 1.8** below:

Table – 1.8: Steam Requirement

Particulars	Sugar Unit	Distillery Unit
Steam Requirement	Existing : 165 TPH After expansion : 282 TPH	Existing : 55.0 TPH After expansion : 77.5 TPH
Sources	• In Sugar Unit, Three (03) numbers boiler of capacity 170 TPH , 70 TPH and 50 TPH is already installed. • In distillery existing boiler (35 TPH and 45 TPH) will be utilised to meet the steam demand.	

Fuel in the steam boiler will be burnt with the help of air in the boiler furnace. Water will be circulated in the boiler drum and tubes thus getting heated by the flame burning in the boiler furnace. Water comes out of the boiler drum located at the top of the boiler as steam. Flue gases rise in the boiler furnace and come in contact with the steam coming out of boiler drum. Steam after coming in contact with flue gases gets heated up further thus getting superheated. Super-heated steam leaves the boiler in a pipe. Flue gases after super heating the steam pass through economizer where they pre-heat the boiler feed water before it enters the boiler drum. After economizer, flue gases pass through air pre-heaters where they heat the air which is fed to the boiler furnace for burning the fuel.

In Sugar unit, boiler of capacity 50 TPH and 70 TPH, after air pre-heaters flue gases pass through a wetscrubber where the dust particles are comes in contact with water, get settled with water in the form of slurry. After passing through Wet scruber, clean flue gases with dust particle concentration also known as SPM level less than 150 mg/Nm^3 through a chimney of prescribed height. The dust is collected from the bottom of the wet scrubber in the form of slurry. Electric power will be generated by the alternator. This electric power generated will be consumed in house i.e. for running the sugar plant and utilities like boilers auxiliaries etc. ESP has been installed as Air Pollution Control Device for One (01) number existing 170 TPH boiler.

In Distillery Unit, Bag filter has been installed as Air Pollution Control Device for Incineration boiler of capacity – 35 TPH and ESP has been installed as Air Pollution Control Device for Incineration boiler of capacity – 45 TPH.

(c) Fuel Requirement

Bagasse will be used as fuel for existing boilers. Bagasse will be used as fuel after expansion also. Details regarding quantity of fuel required, their source along with distance & mode of transportation for proposed expansion project are given in **Table – 1.9.** For the storage of bagasse yard adequate area has been already provided.

Table – 1.9: Fuel Requirement

Particulars	Existing	After proposed expansion
Bagasse (for Sugar Unit)	**3163 TPD**	**No Change**
Bagasse (for Distillery Unit)	**290 TPD**	**367 TPD**
Source	In-House from Sugar mill as well as nerby Sugar mills.	

(d) Power Requirement

Existing power requirement for integrated plant is 21.5 MW, out of which 16.5 MW is for sugar unit and rest 5 MW is for distillery unit. The total power requirement after proposed expansion of project will be 29.5 MW, which will be sourced from in house co generation power plant of capacity 41 MW & 8.5 MW respectively for sugar and Distillery unit. For power backup D.G Sets (kept as back up for emergency purpose only). Detail breakup of power requirement is given in **Table: 1.10.**

Table-1.10 Breakup of power requirement

S.No.	Particulars	Details	Source
1	Power Requirement for existing 9,000 TCD sugar mill	16.5 MW	**Source:** From their own Cogeneration power plant
2	Power Requirement after proposed expansion 14,000 TCD sugar mill	23.0 MW	
	Cogeneration Power Production: Existing – 41 MW and for expansion – 71 MW		
3	Existing Distillery power requirement	5 MW	**Source:** From their own Cogeneration power plant
	Power requirement after expansion	6.5 MW	
	Cogeneration Power Production: Existing – 8.5 MW		

(e) Man Power Requirement

Due to the proposed expansion of Integrated sugar mill project in the region direct and indirect employment avenues will be created in the nearby areas. In existing sugarcane based integrated sugar mill 800 manpower is required in season and approx 680 manpower is used during off-season. After expansion of existing sugar mill approx 200 persons will be added during season. The total manpower during season will be 1000. In existing plant 680 persons are required during off-season and after expansion existing man power is sufficient to run the plant. The total manpower during off-season will be 680.

Apart from direct employment of approx 1000 people during operation, the industry will create employment for around 150 (approx) people during construction phase and numerous other indirect employment opportunities. Breakup of employment is given below:

Skilled Manpower	Semi-Skilled Manpower	Contractual Manpower
200	400	400

(f) Boiler Details

Existing sugar setup having three (03) nos boilers of capacity: 170 TPH, 70 TPH & 50 TPH. No additional boiler will be required for proposed sugar cane crushing capacity expansion and Distillery expansion too. After proposed expansion, steam demand will be increase from 165 TPH to 282 TPH to meet the increased demand existing boiler are sufficient.

Table- 1.11: Boiler details

	Existing Sugar Unit After expansion	**Existing Distillery Unit After expansion**
Type of Fuel	Bagasse	Slop + Bagasse
Quantity of Fuel	3163 TPD (No change after expansion)	Existing : Slop – 660 TPD & Bagasse – 290 TPD, After expansion : Slop – 734 TPD & Bagasse – 367 TPD
Capacity of Boiler	• 02 No. of Boiler capacity 70 TPH & 55 TPH, • 01 Nos of 170 TPH	• 02 No. of Slop fired incineration boiler capacity 35 TPH & 45 TPH
Stack Height	• Existing 1 No stack of height - 60 meters with Boiler capacity 70 TPH & 55 TPH • Existing 1 No stack of height – 72 meters with Boiler capacity 170 TPH	• Existing 1 No stack of height - 70 meters with Boiler capacity 35 TPH • Existing 1 No stack of height – 77 meters with Boiler capacity 45 TPH
Pollution Control Equipment	Wet scrubber, ESP	Bag filter and ESP

Source: *Prefeasibility Report*

(g) Details regarding the D.G. Sets

Proposed 01 No of DG set capacity 750 kVA will be installed for proposed expansion. Details regarding the D.G. Sets are mentioned in the table given below:

Table 1.12:
Details regarding the D.G. Set

Sr. No	Details	After Proposed Expansion
1	Type of fuel	HSD / LDO
2	Capacity	750 kVA
3	Stack Height	-
4	Pollution control of equipment measures	Adequate stack height & Acoustic Chamber for Noise pollution control

(h) Storage Facilities

Storage facility is available for storage of Bagasse in bagasse yard, it is partially covered. Sugar is stored in covered sheds. For Molasses 60 days' storage will be provided. Bagasse is being stored in fuel yard.

4. SITE ANALYSIS

(i) Connectivity

The project site is well connected to MDR 157W which is at 1.23 km in South west direction and nearest airport is Indira Gandhi International Airport, New Delhi which is 145.55 km in South direction.

The site is suitably located with respect to availability of raw material, water, road network, skilled/semi-skilled/unskilled and professional manpower etc. All communication facilities such as telephone, telefax & internet are available in the vicinity of the plant site.

(ii) Land from Land use and Land ownership

The total plant area is 51.39 Ha (127 acres). The expansion will be done within the existing premises. The land is already under the possession of company.

(iii) Topography

The geographical coordinates of the area are 28°42'21.66"N and 78°32'40.41"E. The proposed expansion site is 206 meter above the mean sea level.

(iv) Existing land use pattern (agriculture, non-agriculture, forest, water bodies (including area under CRZ)), shortest distances from the periphery of the project to periphery of the forests, national park, wild life sanctuary, eco sensitive areas, water bodies (distance from the HFL of the river), CRZ. In case of notified industrial area, a copy of the Gazette notification should be given

Table –2.1: Environmental settings of the area

S. NO.	PARTICULARS	DETAILS (with approximate aerial distance & direction from plant site)
1.	Nearest village	➢ Village Asmoli – 1.30 km in South-West direction. ➢ Village Kanpur Band – 1.60 km in South direction. ➢ Village Ramnagar – 1.32 km in South-East direction. ➢ Village Akbarpur Gahra – 1.92 km in North-West direction.
2.	Nearest City	Tehsil & District – Sambhal – 12.56 km in South direction.
3.	Nearest National / State highway	➢ 157 W (Sambhal- Joya Rd) – 1.23 Km in South-West direction. ➢ Asmoli Madhan Rd - 0.01 Km in West direction. ➢ NH-9 (Ghaziabad-Moradabad-Rampur) – 12.89 Km in North direction. ➢ SH-51 (Sambhal-Hasanpur Rd) – 10.47 Km in South-West direction. ➢ SH-51 (Moradabad- Sambhal-bahjoi Rd) – 11.82 Km in South-East direction.
4.	Nearest Railway Station	➢ Sirsi Mukhdampur Railway Station – 12.48 km in South-East direction. ➢ Sambhal Hatim Sarai- Railway Station – 12.54 km in South direction.
5.	Nearest Airport	➢ Hindon Airport – 115.57 km in West direction. ➢ Indira Gandhi International Airport– 145.55 km in West direction.
6.	National Parks, Wildlife Sanctuaries, Biosphere Reserves, Tiger/ Elephant Reserves, Wildlife Corridors etc. within 10 km radius	**None within 15 km radius.**

7.	Reserved Forests (RF) / Protected Forests (PF) etc. within 10 km radius	**None within 15 km radius.**
8.	River / Water Body (within 10 km radius)	• Sot or Yar-i- Wafadar Nadi – 0.1 km in North direction.
9.	Seismic Zone	Earthquake High Damage Risk Zone-IV
	Critically Polluted Area as per CEPI-CPCB	None

(v) Existing Infrastructure

Total plant area is about 51.39 Ha. The Expansion of existing Sugar unit from 9000 TCD to 14000 TCD without change in existing co gen power capacity – 41 MW and Distillery expansion from 250 KLD to 350 KLD without change in existing co gen power capacity - 8.5 MW within existing industry premises.

(vi) Soil classification

Soils of Bijnor area is of 4 types namely (i) Bhur or Sandy soil (ii) Bur Sewai or Sandy loam soil (iii) Sawai or loam soil & (iv) Matiyar or clayey soil. In general or high grounds of upland areas, the soil is of sandy loam soil type and often it is pure sand. On level stretches it is a mixture of sand and clay i.e. from sandy loam to loam. In low areas Khadar/depression it is silty loam to silty clay. Here the sand disappears leaving argillaceous clay locally known as Matiyar .

(vii) Climatic data from secondary sources

The climate of the district is same as that in the other sub-Himalayan districts in the state. It is influenced by district's proximity to the hills and tarai swamps of the north. Although the air is dry in summer it contains moisture during the rest of the year. The cold season from December to February is followed by summer, which continues till June. The southwest monsoon then ushers in rainy season and lasts till the end of September, October, November constitute the post monsoon season. There is a metrological observatory at Bareilly the records of which may be taken. The coldest month of the district is January with minimum temperature 4-6°C and maximum temperature 40-46°C was observed in June. The hot dry and often dusty westerly blow in may to June months. The average rainfall of the district is 760 Millimeter. The rainfall generally increase from southwest towards the north-east.

(viii) Social Infrastructure available

Infrastructure such as school, colleges, market, banks, hospitals, public transport, road, drinking water, electricity, post, telecommunication, cinema halls, radio, etc are easily available to the local people.

The present project is proposed by one of the leading and progressive sugar industry from western Uttar Pradesh. The integrated sugar factory has already initiated several activities for the development of the region. Some of the prime activities are as follows.

- The factory is providing medical aid to the employees and their dependents.
- It provides primary school educational facilities to the children of workers.
- It helps member farmers by supplying organic and chemical fertilizers, press-mud and the developed cane seeds approved by Government agency like NSI Kanpur. The factory also arranges field demonstration to educate the farmers in sugarcane cultivation through application of scientific methods.
- Regular tree plantation with development being done every year through the separate tree plantation cell in their campus and surrounding area. For nearby schools, hospitals free of cost plants are provided.

5. PLANNING BRIEF

(i) Planning Concept (type of industries, facilities, transportation etc.) Town and country Planning/ Development authority classification.

The existing industry is Sugar unit capacity 9000 TCD and Distillery unit having capacity 250 KLD. Integrated Industry proposed Expansion of existing Sugar unit from 9000 TCD to 14000 TCD without change in existing co gen power capacity – 41 MW and Distillery expansion from 250 KLD to 350 KLD without change in existing co gen power capacity - 8.5 MW within existing industry premises. Transportation of raw material will be sourced from existing sources only.

(ii) Population Projection

This is expansion project. Existng industry having colony within premises. For proposed expansion temporary additional influx of people will be there as contractual staff generally oudsider. A projection may be made by a governmental organization, or by those unaffiliated with a government.

(iii) Land Use Planning

Total Plant area is 51.39 Ha. Expansion by modernization will be set up in the existing plant premises. No additional land will be required. About 33% of the total plant area has already been developed under greenbelt & plantation in order to reduce dust & noise pollution levels & to increase aesthetic beauty of the area. The same will be maintained.

(iv) Assessment of infrastructure demand (Physical & Social)

The company has assessed the demand of infrastructure (Physical & Social) in nearby area of the plant site and development activities are being undertaken under corporate social responsibilities program for rural development initiatives for the upliftment of the nearby communities from time to time.

(v) Amenities/Facilities

The company has constructed dispensary, canteen etc for the permanent and contract employees. The company will develop the Amenities/Facilities in nearby area of the plant site as per requirement of local people of the nearby area under corporate social responsibilities programme.

6. PROPOSED INFRASTRUCTURE

(i) Industrial Area (Processing Area)

Total plant area is 51.39 Ha (127 acres). Expansion of existing integrated sugar unit will be done within existing premises.

(ii) Residential area (Non-Processing area)

There is residential area within the existing plant premises. No additional residential area will be develop for proposed expansion.

(iii) Green Belt

The company has already developed greenbelt / plantation in 33% of total plant area i.e. 16.96 hectares' area and the same will be maintained in future.

(iv) Social Infrastructure

The 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.

(v) Connectivity

The site is well connected with communication facilities like telephone, fax, and wireless as such, no constraints are envisaged in this aspect as the Tehsil and District headquarters are near to the site.

(iv) Drinking Water

M/s DSM Sugar Asmoli (A unit of Dhampur Sugar Mills Limited) draws water from well and supply the drinking water to factory.

(v) Sewage Treatment System

Domestic waste water is being/will be treated in Sewage treatment Plant and will be used in Green Belt development/maintenance.

(vi) Industrial Waste management

Proposed Distillery is being / will be based on Zero Liquid Discharge (ZLD). Sugar unit Waste water generated is being / will be treated in Effluent Treatment plant of capacity 3000 KLD which is based on Activiated Sludge process. Treated water from sugar unit will be utilised in agricultural field.

(vii) Solid Waste Management

Major Solid waste generated from the Sugar unit is Boiler ash, Fly ash, ETP sludge, Press mud and Oil & grease from ETP. Fly ash generation from Distillery unit will be sold to farmer and fertiliser industry. Details of solid waste generation and its management is given in Table below.

Table – 2.2, Solid Waste Details & Its Disposal Plan

Name of Solid waste	Existing capacity	Total After Expansion	Management Plan
Sugar Unit			
Boiler ash	56.93 MT/Day	No Change	Boiler ash is being / will be supplied to the brick manufacturer.
ETP Sludge	8.0 MT/Day	12.0 MT/Day	ETP Sludge is being / will be given to the farmers.
Press Mud	405 MT/Day	630 MT/Day	Press mud will be given to the farmers
Distillery Unit			
Fly Ash	124.02 MT/Day	138.72 MT/Day	Fly Ash is being / will be provided to farmer and fertilisers.

(viii) Power requirement and source

Existing power requirement for integrated plant is 21.5 MW, out of which 16.5 MW is for sugar unit and rest 5 MW is for distillery unit. The total power requirement after proposed expansion of project will be MW, which will be sourced from in house co generation power plant of capacity 43.3 MW & for power backup D.G Sets (kept as back up for emergency purpose only). Surplus Power will be exported to the state grid.

7. REHABILITATION AND RESETTLEMENT (R & R) PLAN

(i) Policy to be adopted (Central/State) in respect of the project affected persons including home oustees, land oustees and landless labourers (a brief outline to be given).

The expansion of Integrated Sugar plant will be done with in premises with addition of plant and machinery. No additional land is required for the same. Therefore, there will not be displacement of people and hence, Rehabilitation & Resettlement is not applicable.

8. PROJECT SCHEDULE AND COST ESTIMATES

(i) Likely date of start of construction and likely date of completion (time schedule for the project to be given).

The project commissioning activities will be started after getting Environmental Clearance (EC) from the MOEF&CC and relevant Consents from UPPCB. Tentative schedule for getting approvals for installation of project with the status of implementation is given in the table below: -

Table-2.3: Proposed schedule for approval & implementation

Sr. No	Particulars	Schedule
1	NoC/ CTE (from UPPCB)	After 3-6 months of obtaining EC from MOEF&CC, New Delhi
2	Installation of plant	12 - 18 months
3	Consent to Operate (from UPPCB)	After installation of the plant
4	Commencement of plant operations	After obtaining Consent to Operate
Plant activities will commence within 1.5 years of acquiring Environment Clearance.		

(ii) Estimated project cost along with analysis in term of economic viability of the project.

Existing project cost is 425 Crores. Total estimated cost for expansion of existing sugar industry will be Rs 575 Crores.

- Total cost of the Project for expansion : Rs. 150.0 Crores
- Cost for Environment Protection Measures:
- Capital Cost: Rs. 6.50 Crores

- Recurring Cost: Rs. 5.5 Crores/ annum

9. ANALYSIS OF PROPOSAL

(i) Financial and social benefits with special emphasis on the benefit to the local people including tribal population, if any, in the area.

Proposed capacity enhancement by modernization project will result in growth of the surrounding areas by increasing 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.

Uttar Pradesh state will get revenues in terms of taxes. Business opportunities for local community will be available like transport of alcohol to market, fly ash transport to Brick manufactures, maintenance & house-keeping contract work etc.

10. Source of Pollution and Control Measures

1. Air Pollution

Sugar Plant :

The following air pollution control systems are present in the existing sugar mill: Existing: Wet Scrubber – connected with existing two (02) boilers of capacity 70 TPH and 50 TPH respectively with stack. Stack height is 60 meters above ground. ESP connected with One boiler of capacity 170 TPH with Stack height is 72 meters above ground.

As per MoEF guidelines, regular monitoring of air emissions and ambient air quality will be carried out through MoEF&CC approved laboratories. Green belt in around more 33% area has been developed and which will act like adsorbent of air pollutants. To combat fugitive emissions roads are paved and regularly swept. Water sprinklers are provided for suppression of dust. Vehicular exhaust is being maintained by providing regular maintenance and servicing of vehicles. Same will be continued for future also.

Distillery Plant :

The following air pollution control systems are present in the existing distillery unit: Existing: Bag filter – connected with existing slop fired boiler one (01) no of capacity 35 TPH with stack height 70 m above ground level and ESP has been installed as APCS with slop fired boiler one (01) no of capacity 45 TPH. OCEMS system has been installed in stack and attached to SPCB and CPCB server for data transfer.

2. Water Pollutions

Proposed Distillery is being / will be based on Zero Liquid Discharge (ZLD). Sugar unit Waste water generated is being / will be treated in Effluent Treatment plant of capacity 3000 KLD which is based on Activiated Sludge process. Treated water from sugar unit will be utilised in agricultural field.

3. Solid Waste Management

Major Solid waste generated from the Sugar unit is Boiler ash, Fly ash, ETP sludge, Press mud and Oil & grease from ETP. Details of solid waste generation and its management is given in Table below: 2.4.

Table: 2.4, Solid Waste Details & Its Disposal Plan

Name of Solid waste	Existing capacity	Total After Expansion	Management Plan
Sugar Unit			
Boiler ash	56.93 MT/Day	No Change	Boiler ash is being / will be supplied to the brick manufacturer.
ETP Sludge	8.0 MT/Day	12.0 MT/Day	ETP Sludge is being / will be given to the farmers.
Press Mud	405 MT/Day	630 MT/Day	Press mud will be given to the farmers
Distillery Unit			
Fly Ash	124.02 MT/Day	138.72 MT/Day	Fly Ash is being / will be provided to farmer and fertilisers.

11. Description of Mitigation Measures

Following mitigation measures will be adopted by **DSM Sugar, Asmoli, Distillery Unit** to minimize the impact of project on the surrounding environment.

Sr.No	Particulars	Mitigation Measures
1.	Air Environment	❖ All existing sources/ boilers has been provided with ESP, Bag filtrer and wet scrubber along with adequate stack height. PM emissions below permissible limits (i.e. < 150.0 mg/Nm^3) in Sugar

		unit. ❖ PM emissions below permissible limits (i.e. < 50.0 mg/Nm^3) in Distillery unit. ❖ Proper maintenance of vehicles will be done regularly. ❖ CPCB guidelines for Fugitive dust emission control will be followed. ❖ Green belt will be developed along the plant premises as dust preventive barrier. ❖ Regular air quality monitoring will be carried out as per CPCB / SPCB norms.
2.	Water Environment	**Sugar Unit** • A duly lined lagoon upto 15 days capacity will be provided. • Effluent from manufacturing process shall be treated in ETP of capacity 3000 KLD and Domestic Waste water is being treated in STP of capacity 60 KLD. • ETP treated water was used for water sprinkling, horticulture purpose and Floor washing and same will be followed after expansion. • 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 U.P. Pollution Control Board and CPCB will be done. **Distillery Unit :** • Spent wash generated is being / will be concentrated in MEE then MEE Concetrate will be utilised as fuel in Slop fired incineration boiler of capacity – 35 TPH and 45 TPH. • Other effluent generated from the process is being / will be treated in Condensate Polishing Unit of capacity – 4500 KLD. • Same treatment scheme will be adopted after

		expansion also.
3.	Solid /Hazardous Waste Environment	• Boiler ash from sugar plant boiler is being / will be provided to brick manufacturer. • ETP sludge from sugar unit is being / will be collected and given to the farmers. • Bagasse is being / will be used as fuel in the boilers. • Press mud is being / will be given to the farmers for utilization as manure. • Oil & Grease recovered from ETP is being / will be mixed with bagasse then burn in boiler. • Fly ash from Distillery unit is being / will be provided to farmer and fertiliser industry and manure.
4.	Noise Environment	➢ Proper maintenance, oiling and greasing of machines at regular intervals will be done to reduce generation of noise. ➢ Personal Protective Equipment like earplugs and earmuffs will be provided to the workers exposed to high noise level. ➢ Green belt development (plantation of dense trees across the boundary) will help in reducing noise levels in the plant as a result of attenuation of noise generated due to plant operations, and transportation. ➢ Acoustic enclosure for Turbine & D.G. sets would be used. ➢ Regular monitoring of noise level will be carried out. ➢ A high standard of maintenance and proper lubricants will be practiced for plant machinery and equipment, which helps to avert potential noise problems.
5.	Odour Management	• The remedial measures will be taken such as better housekeeping by regular steaming of all the

		equipments. • Temperature will be kept under control during the Sugar manufacturing process.