EXECUTIVE SUMMARY

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OF

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT

FOR

Proposed 150 KLPD Molasses/Cane Juice/Grain based Distillery along with 3 MW Co-generation power plant, Expansion of Sugar Mill (3500 TCD to 6000 TCD) & Co- Generation Power Plant (4.5 MW to 7.5 MW) within the Existing Plant Premises

At

Village Arala-Karanguli, Tehsil Shirala, District Sangli, Maharashtra

Applicant

M/s Dalmia Bharat Sugar and Industries Limited (Unit Ninaidevi, Kokurd) Regd. Office : Dalmia Bharat Sugar and Industries Ltd. Dalmiapuram - 621 651 District : Tiruchirappalli, Tamil Nadu Phone No.: 011-23465100; Fax No. 011-23313303 E-mail: mittal.pradeep@dalmiasugar.com

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1.0 **PROJECT DESCRIPTION**

1.1 INTRODUCTION

Dalmia Bharat Sugar Industries Limited (DBSIL) is operating an existing 3500 TCD Sugar Mill & 4.5 MW cogeneration power plant at Village Arala-Karanguli, Tehsil Shirala, District Sangli, Maharashtra. The existing sugar mill plant is operating on the basis of CTO for air and water from obtained from Maharashtra Pollution Control Board (MPCB).

The company is proposing 150 KLPD Molasses/Cane Juice/Grain based Distillery along with 3 MW Cogeneration Power Plant, Expansion of Sugar Mill (3500 TCD to 6000 TCD) & Co- Generation Power Plant (4.5 MW to 7.5 MW) within the Existing Plant Premises. The distillery will be installed with the most modern technology for treatment of distillery spent wash which ensures Zero discharge of distillery effluents.

As per EIA Notification dated 14th Sep, 2006 and as amended on 13thJune, 2019, the project falls under Category "A", Project or Activity '5(g)' Distilleries. [Molasses based distilleries>100 KLPD & Non-Molasses based distilleries >200 KLD] and 5 (j) Sugar Industry [5000 TCD cane crushing capacity].

Standard ToR Letter was issued by MoEFCC, New Delhi for the preparation of EIA/EMP Report vide their letter no. J-11011/121/2021-IA II (I) dated 27th March, 2021.

S. NO.	PARTICULARS	DETAILS			
A.	Nature	Proposed 150 KLPD Molasses/Cane Juice/Grain based Distillery along with 3 MW Co-generation Power Plant, Expansion of Sugar Mill (3500 TCD to 6000 TCD) & Co- Generation Power Plant (4.5 MW to 7.5 MW) within the Existing Plant Premises.			
В.	Size of the Project				
	Particular	Existing Capacity	Proposed Expansion Capacity	Total Capacity after Proposed expansion	
	Distillery	-	150 KLPD	150 KLPD	
	Distillery Co-generation power plant	-	3.0 MW	3.0 MW	
	Sugar Mill	3500 TCD	2500 TCD	6000 TCD	
	Co-generation power plant	4.5 MW	3.0 MW	7.5 MW	
C.	Location details				
	Village	Arala-Karanguli			
	Block / Tehsil	Shirala			
	District	Sangli			
	State	Maharashtra			
	Latitude	17°05'06.14" to 17° 05'21.65"N			
	Longitude	73°54'40.01" to 73°55'22.57"E			
	Topo sheet No.	47 G16 & 47 K4			
D.	Area Details				

1.2 DETAILS ABOUT THE PROJECT

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	Total Plant Area	Total plant area is 31.04 Ha. Proposed installation of distillery & expansion of sugar mill will be done within the existing plant premises
	Greenbelt / Plantation Area	25.32 acre (10.25 ha) i.e. 33% of the plant area is being/will be developed under greenbelt & plantation.
E.	Environmental Settings	
1.	Nearest Village	Arala-Karanguli (~0.5 km in SE direction)
2.	Nearest Town & City	Malkapur (~18 km in South direction)
3.	Nearest National Highway / State Highway	SH 144 (~9.0 km in SE Direction) NH-204 (~15.5 km in South direction)
4.	Nearest Railway station	Karad (~40km in NE direction)
5.	Nearest Airport	Kolhapur (~55km in SE direction)
6.	National Parks, Wild Life Sanctuaries, Biosphere Reserves, Tiger/ Elephant Reserves, Wildlife Corridors, Reserved Forests (RF) / Protected Forests (PF) etc. within 10 km radius	 Chandoli national park [Part of Sahyadri Tiger Reserve] (~6 km in NW Direction (Outer boundaries). Some Unnamed reserve forests
7.	River / Water Body (within 10 km radius)	 Warana River (~1.0 km in WSW direction) Chandoli Dam (~8.0 km in NW direction) Warana Left Bank Irrigation Canal (Adjacent to the plant site in North direction)
10.	Seismic zone	Zone - III as per IS: 1893 (Part-I): 2002
F.	Cost Details	
1.	Total cost of the project	Rs. 185.0 Crores (Sugar Plant & Co-generation power Plant – 55 Crores + Distillery along with Co-generation power plant – 130 Crores)
2.	Cost for Environmental Protection Measures	 Capital Cost - Rs 50.0 Crores Recurring Cost Rs. 2.50 Crores /annum
G.	Products & By-products	 Products Distillery - Ethanol/ RS/ Impure alcohol/ ENA Sugar Mill – Sugar Co-generation Power Plant – Power By Product Grain Based Operations of Distillery- DDGS & Carbon Dioxide Sugar mill- Bagasse, Molasses, Press mud
H.	Working days	 Distillery & 3.0 MW Co-gen power plant - 365 days/annum Sugar Plant & 7.5 MW Co-gen power Plant - 180 days/annum

Source: Site visit & Pre-feasibility Report

1.3 LOCATION MAP

Proposed 150 KLPD Molasses/Cane Juice/Grain based Distillery along with 3 MW Co-generation power plant, Expansion of Sugar Mill (3500 TCD to 6000 TCD) & Co- Generation Power Plant (4.5 MW to 7.5 MW) within the Existing Plant Premises At Village Arala-Karanguli, Tehsil Shirala, District Sangli, Maharashtra

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LOCATION MAP INDIA **MAHARASHTRA** MAHARASHIIRA С SANGLI (Maharashtra) Dighand Atpa rsumdi Nagal Ashta ANGLI FOREST ed 150 KLPD Molasses/Cane Juice/Grain based Distillery sed 150 KLPD Molasses/Cane Juice/Grain based Di along with 3 MW Co-generation power plant, Expansion of Sugar Mill (3500 TCD to 6000 TCD) & Co- Generation Power Plant (4.5 MW to 7.5 MW) within the Existing Plant Premises RESERVED FORES M/s. Dalmia Bharat Sugar and Industries Limited Unit Ninaidevi, Kokrud At Village Arala-Karanguli, Tehsil Shirala, District Sangli, Maharashtra

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1.4 REQUIREMENTS FOR THE PROJECT

1.4.1 Raw material requirement

The basic raw material for the manufacturing of Ethanol/ RS/ Impure alcohol/ ENA will be Molasses/Cane juice/Grains and Sugarcane for manufacturing sugar in sugar mill. In the present scenario, molasses/cane juice will be obtained from own sugar mill which is a by-product of its operations. Grains with different starch content will be used like broken rice, sorghum, bajra, maize etc. Details regarding quantity of raw materials required their source along with mode of transportation for proposed installation of distillery & expansion of sugar mill are given in table below:

S. No.	Particulars	Total Requirement after Expansion	Source	Mode of transportation	Storage facility
Α	Sugar Mill				
i.	Sugar Cane	6000 TPD	Local growers	Cart, Tractor Trolley & Trucks	No storage required
В	Distillery				
i.	Molasses/ Cane juice	C-Heavy Molasses (565 TPD) Or B-Heavy Molasses (468 TPD) Or Cane Juice (469 TPD)	In-house sugar industry and nearby sugar mills	In house Pipeline and tankers	Tanks
			Or		
ii.	Grain - Broken Rice, Sorghum, Bajra, Maize etc.	345 TPD	Local supplier	Trucks	Silo

Raw materia	l requirement,	storage,	source	& trans	portation
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Source: Pre-feasibility Report

1.4.2 Fuel Requirement

Detailed table of fuel consumption is given below:

Fuel requirement

I	Raw Material	Quantity (TPD)	Source	Mode of transportation	Storage facility
Co-Generation Power Plant	Bagasse	500	In-house/ Bought out	In-house/trucks	Bagasse yard
	Coal (@15%) As per MNRE guideline	70	Open Market	Covered trucks	Coal shed
Boiler in Distillery	Spent wash/Bagasse	Bagasse- 350 TPD or Conc. Spent Wash 284 TPD +150 TPD Bagasse	In-house from Distillery	In-house	-
	In case of shortage of bagasse Coal (Supporting fuel) will be used	150 TPD Max.	Open Market	Covered trucks	Coal shed

1.4.3 Other Basic Requirements

Other basic requirements for proposed installation of distillery & expansion of sugar mill are given in the table below:

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Basic requirements for the project

S. No.	Particular	Existing Requirement	Total Requirement after expansion	Source
1.	Fresh Water (m ³ /day) for Sugar Mill	289	368	Surface water (Warana river)
2.	Fresh Water (m ³ /day) for Distillery	-	882	
3.	Power (MW)	4.5	10.5	Co-generation power plant
4.	Manpower (persons)	320	450	Unskilled / Semi-Skilled - Local Area; Skilled – Outside

Source: Pre-feasibility Report

1.5 PROCESS DESCRIPTION

Molasses/Cane juice based distillery	Grain based distillery	Sugar Manufacturing
 Molasses unloading and storage Yeast propagation and fermentation Multi Pressure Distillation with Integrated Evaporation Alcohol daily receivers & bulk storage 	 Grain storage Grain cleaning, milling and flour handling Slurry preparation & liquefaction Fermentation Multi pressure distillation Multi Effect Evaporation & Dryer Alcohol daily receivers & bulk storage 	 Crushing of Sugarcane Juice Clarification and Filtration Crystallization Centrifugation Drying, grading and Bagging of Sugar

1.6 DESCRIPTION OF ENVIRONMENT

Presentation of Results (Air, Noise, Water and Soil)

Baseline study of the study area was conducted during Summer Season (March to May, 2021). Ambient Air Quality Monitoring reveals that the concentrations of PM_{10} and $PM_{2.5}$ for all the 8 AAQM stations were found between 47.1 to 73.6 μ g/m³ and 22.0 to 45.5 μ g/m³ respectively. The concentrations of SO₂ and NO₂ were found to be in range of 5.0 to 13.7 μ g/m³ and 9.1 to 27.7 μ g/m³ respectively.

Ambient noise levels were measured at 8 locations within the 10 km radius area from the plant site. Noise levels vary from 45.1 to 56.7 Leq dB (A) during day time and 37.0 to 43.8 Leq dB (A) during night time.

The ground water analysis for all the 8 sampling stations shows that pH of the groundwater samples ranged from 6.85 to 7.44 which is within the permissible limit and fairly basic in nature. The color and turbidity were below detectable limit and odor & taste was agreeable. The total dissolved solids ranged from 106.0 to 227.0 mg/l indicating rich dissolved mineral nutrients. This observation is supported by moderate values of total hardness 75.81 to 146.67 (mg/l) and total alkalinity 71.3 to 177.65 (mg/l). Based on the high conductivity values 172 to 366 µs/cm, the groundwater samples are rich in dissolved substances and minerals which are good for irrigation purpose.

Soil samples collected from different land use classifications indicate pH value ranging from 6.72 to 7.26 which is moderately alkaline for agricultural soils. Water holding capacity (52.34% to 65.71%) is favorable for the crops but showed tendency towards water logging due to the presence of clayey type soil texture which increases surface area for greater water holding capacity. However, the bulk density 1.15 to 1.40 (g/cc) was

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within the optimum level 1.0 to 1.8 (g/cc). Chloride levels (27.98 to 220.41 mg/kg) and SAR (0.08 to 0.17) of the soil samples are low to medium indicating no toxicity or low salinity of soil especially in plant site. Organic carbon ranges from 0.38% to 0.64% which is medium, potassium 55.25 to 252.08 (kg/ha) was moderate; available nitrogen 246.55 to 335.74 (kg/ha) was medium and available phosphorus 39.3 to 73.42 (kg/ha) is high. This indicates that soil fertility is medium to high.

1.7 ENVIRONMENTAL MONITORING PROGRAMME

Details of the environmental monitoring schedule / frequency, which will be undertaken for various environmental components, as per conditions of EC/CTE/CTO are given in Table below:

S. No.	Description	Frequency of Monitoring	Locations of monitoring
1	Ambient Air Quality	As per EC/CTO condition	Within and outside plant area at least 4 locations (1 within and 3 outside the plant area at an angle of 120 ⁰ each) covering upwind and downwind directions
2	Stack Monitoring	Continuous monitoring	Plant Site (Boiler)
3	Ground Water Quality	As per EC/CTO condition	In and around the plant site
4	Effluent quality	Daily (in house laboratory)	ETP outlet
5	Noise Level Monitoring	As per EC/CTO condition	In & around the plant site
6	Soil Quality	Yearly	In plant site
7	Medical checkup of employees	Yearly	Nearby hospitals/dispensary

Frequency and location for post-project monitoring

1.8 **PROJECT BENEFITS**

The installation of distillery & sugar mill expansion project of Dalmia Bharat Sugar Industries Limited will result in growth of the surrounding areas by increasing direct and indirect employment opportunities in the region including ancillary development and supporting infrastructure. Development of social amenities will be in the form of medical facilities, education to underprivileged and creation of self-help groups. Maharashtra will get revenues in terms of taxes and local people will get direct & indirect employment. Business opportunities for local community will be available. No adverse effect on environment is envisaged as proper mitigation measures will be taken up for the same. Project will be implemented based on community needs and with significant local contributions. Important areas identified through socio-economic survey and public hearing will be considered for social welfare activities covered under EMP. This approach will strengthen the groups, empower the members.

1.9 ENVIRONMENT MANAGEMENT PLAN

Following mitigation measures will be adopted by the company to minimize the impact of project on the surrounding environment:

Particulars	Details	
Air Quality Management	Wet Scrubber with stack of adequate height has been installed with the existing sugar mill boilers (25+28 TPH) to control the particulate.	
	ESP/Bag Filter with stack of adequate height will be installed with the proposed boiler	

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	(30 TPH) to control the particulate and gaseous emissions due to combustion of fuel.
	• CO2 generated (126 TPD) during the fermentation process will be collected and sold to
	vendors.
	All the roads are concreted to control the fugitive dust emissions.
	• Online Stack Monitoring system is already in place and operational and will be installed for the proposed boiler.
	• Greenbelt is being/will be developed/made dense all around the plant boundary and the same will be maintained.
Water Management	Distillery Division
	• The proposed distillery plant will be completely based on "Zero Liquid Discharge"
	Molasses Based Operation:
	• Spent wash (1057 TPD) generated from the analyzer column during the operation, will be concentrated in integrated & standalone Multi – Effect Evaporator (MEE).
	• Concentrated Spent Wash shall be treated in Agitated Thin Film Dryer Technology (ATFD- Spray dryer for treatment of spent wash) or incinerated in Boiler.
	Grain based operation:
	• Grain slops (840 TPD) will be taken care through Centrifuge Decanters for separation of Suspended Solids separated as Wet Cake and which goes as cattle feed as it contains high protein. (Also known as DWG – Distillers Wet Grains).
	 Thin slops from the Decanter Centrifuge will be partly recycled to process (30-35%) and partly taken to the Thins Slops Evaporation Plant for concentration of remaining solids to form Syrup. This Syrup is also mixed into the Wet Cake coming out of Centrifuge and forms a part of Cattle Feed. (Also known as Soluble – Collectively known as DWGS). Wet Cake / DWGS will be passed through steam tube bundle drier (DWGS dryer) for drying with 10-12% moisture (max.) to give higher shelf life. Solid dry cakes will be obtained finally as DDGS (75 TPD) which will be used as cattle feed.
	• Complete wastewater stream during molasses based operation like Process condensate, cooling tower, boiler blow down (1177 KLPD) will be treated in CPU/ETP (Capacity: 1400 KLPD) and recycled within the process.
	Sugar Mill & Co-Generation Power Plant
	• Uses of water in power plant is reduced drastically by installing Air Cooled Condenser (Although with a higher capital expenditure) instead of water intensive cooling tower operation hence reduction in demand of fresh water.
	• Effluent from Sugar Unit & Co-generation Power Plant (529 KLPD) is being /will be treated in ETP (Capacity 800 KLPD) and treated water will be recycled / reused in process, greenbelt development and ferti-irrigation.
	• Domestic waste water generated from the plant will be treated in STP and utilized in greenbelt development.
Noise Management	• Personal Protective Equipment like earplugs and earmuffs is being/will be provided to the workers exposed to high noise level.
	• Proper maintenance, oiling and greasing of machines at regular intervals is being / will be done to reduce generation of noise.
	• Greenbelt inside the plant premises and at the plant boundary has been developed& maintained.
	• Regular monitoring of noise level is being/will be carried out in and around plant premises to find out any high noise level zones and measures are being/will be implemented accordingly.
	Regular auditing of process area to find out any loosened nuts/bolts/joints to avoid unnecessary noise.
Solid Waste Management	• During grain based distillery operation - Solid waste from the grain based operations generally comprises of fibers and proteins in the form of DDGS (75 TPD), which will be

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	ideally used as Cattle Feed.
	• During Molasses based distillery operation - Dry Powder from ATFD Process and/or from incineration boiler will be used as manure to fertilizer manufacturers.
	• Bagasse generated (146520 TPA) is being/will be used as fuel for power generation in Co-gen Power Plant.
	 Molasses (35460 TPA) generated from Sugar industry will be used as raw material in distillery for Alcohol production.
	• Ash (30 TPD) from the Boiler is being/will be given to nearby brick manufacturers.
	• ETP Sludge generated after treating waste water generated in sugar unit is being/will be used as manure.
	• Press Mud generated (10800 TPA) is being/will be given to the farmers as manure.
	• Used oil (250 KL/annum) generated from the plant machinery/gear boxes as hazardous waste is being/will be sold out to the CPCB authorized recycler.
Odor Management	Adequate greenbelt all around the periphery of the plant.
	• Efficient CO2 collection to avoid carryover of alcohol vapors & other fumes.
	DWGS dryer will be installed for complete drying of solids.
	 Better housekeeping maintains/ will maintain good hygiene condition by regular steaming of all fermentation equipment.
	• Longer storages of any product/by-products is being/will be avoided & use of efficient biocides to control bacterial contamination.
	• Regular use of disinfectants in the drains to avoid generation of putrefying micro- organisms.
Greenbelt Development and Plantation	• Out of the total plant area of 31.04 hectare, 10.25 hectare 33% is being/will be developed under greenbelt / plantation and will be densified.
	 Native plant species has been planted in consultation with local DFO.
	 Greenbelt is being/will be developed as per Central Pollution Control Board (CPCB) guidelines.
	 Greenbelt development along with the road & plant boundary will be continued to attenuate noise level, arrest dust and improve the environment in surrounding.
Occupational health & safety	• Occupational health surveillance program has been/will be taken as a regular exercise for all the employees and their records maintained.
	 Proper storage and handling precautions has been/will be taken. The storage area has been/will be kept cool, dry and well ventilated and away from the source of heat, flame or oxidizers.
	 Use of Personal Protective Equipment (PPEs) has been/will be encouraged. Proper training program on use of PPEs, characteristics of the material handled and safety precautions has been/will be arranged.
	• Fire safety measures has been/will be incorporated within the factory premises. All the fire extinguishing media such as water, dry chemicals, CO2, sand, dolomite, foam, etc. has been/will be kept in vital locations.
	• Mock drill has been/will be arranged for the worker to test the effectiveness of the training program time to time and the way to react in case of emergency.
	• Safety precautions has been/will be displayed in the premises on the banners, boards, etc.

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1.9 CONCLUSION

The proposed installation of distillery & expansion of sugar mill will prove beneficial to the local people as more infrastructure development, improvement in education and health facilities, roads, availability of drinking water, etc. in near-by villages will be done. There will be increase in revenue generation to the government by way of royalty, excise and government taxes etc. There will be no significant impact on the area, as adequate preventive measures are being/will be adopted to maintain the various pollutants within permissible limits. Regular monitoring of all the components of environment is being / will be done. Increased social welfare measures taken by the company will bring development in near-by villages. Greenbelt development around the area is being/will be also taken up as an effective pollution mitigation technique, as well as to control the pollutants released from the premises of Dalmia Bharat Sugar Industries Limited.

