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**SUMMARY ON  
ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

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**OF**

**E.I.D PARRY (INDIA) LTD.**

(Formerly Known as Parrys Sugar Industries Limited)

**Expansion of Integrated Sugar Complex**

Huallatti & Alloli Village,  
Haliyal Taluk,  
Uttara Kannada District,  
Karnataka.

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**SUBMITTED TO**

**KARNATAKA STATE POLLUTION CONTROL BOARD**

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## **1.0 PROJECT DESCRIPTION**

E.I.D Parry (India) Limited (formerly known as Parrys Sugar Industries Limited) is an existing operating integrated Sugar Complex consisting of 4800 TCD Sugar, 24 MW Co-gen power and 45 KLPD Distillery units at Alloli and Hullatti Village, Haliyal Taluk, Uttara Kannada District. .

Now the company has proposed to enhance the capacity of Sugar unit from 4800 TCD to 6000 TCD, Co-gen power from 24 MW to 34 MW and Distillery unit from 45 KLPD to 90 KLPD. Along with this, company has proposed to install Concentrated spent wash incineration boiler to generate 3 MW power. This proposed expansion will be taken up in the existing plant premises of 226 acres. The cost of the proposed expansion Project will be Rs. 125 Crores.

Pioneer Enviro Laboratories & Consultants Private Limited, Hyderabad, which is accredited by NABET, Quality Council of India for conducting EIA studies, have prepared Draft Environmental Impact Assessment (DEIA) report for the proposed expansion project by incorporating the Terms Of Reference issued by MOEF.

- a. Detailed characterization of status of environment in the area of 10 km. radius from the proposed site for major environmental components including air, water, noise, soil, flora, fauna and socio-economic environment.
- b. Assessment of air emissions, liquid waste and solid waste from the proposed expansion project along with the noise level assessment.
- c. Environmental Management Plan (EMP) consisting of Air emission management, waste water management, Noise level management, solid waste management, etc.
- d. Post expansion project monitoring plan

### **1.1 SITE DETAILS**

- The Plant site area does not fall under the industrial areas / clusters, which are listed in MoEF office memorandum, dated 13th January 2010.
- Haliyal village is at a distance of 0.6 Kms from the Plant site.
- Tattihala river is flowing at a distance of 2.2 Kms
- No eco-sensitive area such as National Park / Wildlife Sanctuary / Biosphere Reserves within 10 Km. radius of Plant site
- No Historical places and Places of Tourist importance within 10 Km. radius of the site.
- Unnamed Reserve Forests are present within 10 Km radius of Plant site
- There are no Distillery units within the study area of 10 Km radius

## 1.2 RAW MATERIALS

The following are the raw materials and their requirement for existing and expansion project

S.NO	RAW MATERIAL	SOURCE	QUANTITY ( TPD)			METHOD OF TRANSPORT
			Existing	Expansion	Total	
<b>Sugar plant :</b>						
1	Sugar Cane	Local area	4800	1200	6000	By trucks, tractors& bullock carts
2	Lime	Local area	9.60	2.4	12.0	Through covered trucks by Road
3	Sulphur	Local area	3.84	0.96	4.8	Through covered trucks by Road
4	Phosphoric Acid	Local area	0.96	0.24	1.20	Through covered trucks by Road
<b>Co-gen power plant :</b>						
1	<b>Fuel</b>					
	Bagasse	From Sugar plant	1108	528	1636	Conveyor
<b>Distillery :</b>						
1	Molasses	From Sugar plant	165	165	330	Through Pipeline/Tanker
2.	Fuel for Incineration Boiler					
	Concentrated Spent wash	From Distillery Unit	72 (10 TPH Boiler)	108 (15 TPH Boiler)	180	Through Pipeline
	Coal		24	36	60	Conveyor

## **1.3 MANUFACTURING PROCESS**

### **A) Sugar**

The Sugar cane is received from the farmlands through trucks, weighed and unloaded in the cane carrier and passed through Whole cane shredder. The shredder improves extraction of juice in diffuser. The magasse coming out of diffuser is de-watered with the help of two de-watering mills to bring down the moisture to about 48-50% enabling it to be fed to the boiler for steam generation. The steam generated from co-gen boiler is passed through turbines and in turn power is generated. Emerging out low pressure steam is utilized in the process section.

Extracted cane juice from diffuser is heated to 70 - 75 °C and treated with Lime and sulphur dioxide gas to separate impurities. The mud settles as impurity is recycled to diffuser. The clear settled juice is sent to the Evaporators to evaporate the water and convert it into syrup.

The syrup is further boiled in Pan and sugar crystals are formed in it. High speed centrifugal machines used to separate the sugar crystals and molasses, from the syrup. This molasses will be utilized as raw material in distillery to produce alcohol. The separated sugar is dried and then subjected to further refining in the Refining House to get refined sugar. The refined sugar is marketed in 50 and 100 Kg. bags as per the requirements.

### **B) Co-generation Power Plant**

The power plant consists of the following.

- 45 TPH Traveling Grate Boiler with ESP
- 1 x 10 MW Triple Extraction cum condensing type Steam turbine
- Mechanical auxiliaries like Fuel handling system.
- Water cooled condenser system.
- Electrical auxiliaries

The boiler will be designed to operate with 100% bagasse.

The whole process comprises of generating heat energy in the boiler and then converting heat energy generated in the Travelling Grate Boiler into Mechanical energy in the turbine and further converting this mechanical energy generated in the turbine into electrical energy in the alternator.

### **C) Rectified Spirit / ENA / Ethanol**

The rectified spirit will be manufactured by Yeast propagation, Fermentation and Distillation processes. Continuous fermentation with yeast recycling will be adopted in the distillery plant. The spent wash generation will be restricted to 10 Kl/Kl of spirit production. The spent wash will be concentrated to 60% solids in Multiple Effect Evaporators and incinerated in boilers of 10 TPH (existing) and 15 TPH (proposed) capacity. Ethanol will be produced from Rectified Spirit through dehydration process by using Molecular Sieve technology.

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## 1.4 WATER ENVIRONMENT

Water requirement for the existing Plant is being met from the Kali River. For the proposed expansion also, water required will be met from the Kali River.

Prior permission from Irrigation Department has already been obtained.

### WATER REQUIREMENT FOR SUGAR & CO-GEN POWER PLANT

WATER CONSUMPTION (in KLD)					
Section	Sugar		Co-gen		Total after expansion
	Existing (4800 TCD)	Expansion (1200 TCD)	Existing (24 MW)	Expansion (10 MW)	
a) Domestic	10	--	10	5	25
b) Industrial purpose					
Process water	72	--	--	--	72
Boiler feed			288	140	428
DM plant regeneration			172	84	256
Cooling water make up			1700	0	1700
Service water			10	5	15
<b>Total</b>	<b>82</b>	<b>--</b>	<b>2180</b>	<b>234</b>	<b>2496</b>

### WATER REQUIREMENT FOR DISTILLERY PLANT

SECTION	Water requirement		
	Existing (45 KLPD Distillery)	Expansion (45 KLPD Distillery with 3 MW Power)	Total
Process water	420	420	840
Make up water for Boiler	15	40	55
DM water for R.S dilution	145	145	290
Cooling tower make up	210	210	420
DM plant regeneration	95	110	205
Domestic	10	--	10
<b>Total</b>	<b>895</b>	<b>925</b>	<b>1820</b>

Water requirement for Sugar (Existing) : 82 KLD  
 Water requirement for Sugar (Expansion) : 0 KLD  
 Water requirement for Co-gen power (existing) : 2180 KLD  
 Water requirement for Co-gen power (expansion) : 234 KLD  
 Water requirement for Distillery (existing) : 895 KLD  
 Water requirement for Distillery (expansion) : 925 KLD

**Total water requirement after proposed expansion will be : 4316 cum/day**  
**Total water recycled : 1155 cum/day**  
**Net water requirement : 3161 cum/day**

## 1.5 WASTE WATER GENERATION AND CHARACTERISTICS

Waste water generation from the existing Integrated Sugar complex will be 1363 KLD. Waste water generation from the proposed expansion of Integrated Sugar complex will be 806 KLD. Hence total waste water generation after proposed expansion will be 2169 KLD

### WASTE WATER GENERATION FROM SUGAR & CO-GEN POWER PLANT

SECTION	SUGAR		CO-GEN		Total after proposed expansion
	Existing (4800 TCD)	Expansion (1200 TCD)	Existing (24 MW)	Expansion (10 MW)	
a) Domestic	8		8	4	20
b) Industrial purpose					
Process & Washings	472	112	--	--	584
Boiler Blow down	--	--	15	9	24
DM plant regeneration	--	--	172	84	256
Cooling tower blow down	--	--	100	0	100
Service water	--	--	10	5	15
<b>Total</b>	<b>480</b>	<b>112</b>	<b>305</b>	<b>102</b>	<b>999</b>

### WASTE WATER GENERATION FROM DISTILLERY PLANT

SECTION	Waste Water generation		
	Existing (45 KLPD Distillery)	Expansion (45 KLPD Distillery with 3 MW Power)	Total
Spent wash generation	450	450	900
Boiler blow down	5	12	17
Cooling tower blowdown	20	20	40
DM plant regeneration	95	110	205
Domestic	8	0	8
<b>Total</b>	<b>578</b>	<b>592</b>	<b>1170</b>

Waste water generation from Sugar (Existing) : 480  
Waste water generation from Sugar (Expansion) : 112  
Waste water generation from Co-gen power (existing) : 305  
Waste water generation from Co-gen power (expansion) : 102  
Waste water generation from Distillery (existing) : 578  
Waste water generation from Distillery (expansion) : 592

### **EFFLUENT CHARACTERISTICS**

The characteristics of Spent wash, DM plant regeneration water, cooling tower blow down, boiler blow down and sanitary waste water are shown below.

### CHARACTERISTICS OF SPENT WASH

S. NO.	PARAMETER	UNIT	CONCENTRATION
1.	Ph		4.2 – 4.8
2.	Total Dissolved Solids	mg/l	80,000-1,00,000
3.	COD	mg/l	70,000–1,20,000
4.	BOD	mg/l	45,000 – 55,000

### CHARACTERISTICS OF SANITARY WASTE, COOLING TOWER BLOWDOWN, BOILER BLOWDOWN, DM PLANT REGENERATION WATER

S.NO.	CHARACTERISTICS	SANITARY WASTE WATER	COOLING TOWER BLOW DOWN	BOILER BLOW DOWN	DM PLANT REGENERATION WATER
1.	pH	7.0 – 8.5	7.0 – 8.0	9.5 – 10.5	4.0-10.0
2.	T.D.S. (mg/l)	800 – 900	800 -1 000	1000	8000-15000
3.	B.O.D. (mg/l)	200 – 250	-----	-----	-----
4.	C.O.D. (mg/l)	300 – 400	-----	-----	-----

#### 1.6 EFFLUENT TREATMENT PROCESS

##### A) Sugar Plant

The effluent from Sugar plant will be treated in Oil & Grease trap, Equalization tank, neutralization tank, Primary clarifier, UASB anaerobic digester, Aeration tank, Secondary clarifier and Sludge drying beds. Treated effluent will be utilized for greenbelt development after ensuring quality of treated effluent with standards stipulated for onland for irrigation by CPCB / KSPCB.

##### B) Co-generation Power Plant

Cooling tower blowdown and DM plant regeneration water will be recycled into process. Boiler blowdown and service water effluent will be treated in neutralization tank and treated effluent is will be utilized for greenbelt development / ash conditioning / dust suppression in the plant premises after ensuring quality of treated effluent with standards stipulated for onland for irrigation by CPCB / KSPCB

##### C) Distillery

Spent wash generation will be 450 cum/day which will be treated in multiple effect evaporators to concentrate the solids to 60 % and then will be sent to 10 TPH (existing) and 15 TPH (proposed) boilers for incineration. This is totally a zero discharge based technology. This technology is approved by CPCB.

The condensate generated during the process of Multiple Effective Evaporators will be reused in the Process thus decreasing the net water requirement.

## 1.7 AIR EMISSIONS

There will be two stacks connected to the 45 TPH and 15 TPH boilers in the proposed expansion project. The fuel for the 45 TPH boiler will be Bagasse and 15 TPH boiler will be Concentrated Spent wash. The air emissions of concern from the plant will be PM, SO<sub>2</sub> and NO<sub>x</sub>. Electrostatic Precipitator will be provided to 45 TPH boiler and Bagfilters for 15 TPH Boiler to bring down the particulate emission in the exhaust of the boiler to less than 50 mg/Nm<sup>3</sup>. A stack of 44 m & 50 m height will be provided to 45 TPH and 15 TPH Boilers respectively for effective dispersion of emissions into the atmosphere.

## 2.0 DESCRIPTION OF ENVIRONMENT

Baseline data has been collected on ambient air quality, water quality, noise levels, flora & fauna and socio-economic details of the people within 10 km. radius of the Plant site.

### 2.1 AMBIENT AIR QUALITY

Ambient air quality was monitored for PM<sub>2.5</sub>, PM<sub>10</sub>, SO<sub>2</sub>, NO<sub>x</sub> & HC (methane & non-methane) at 6 stations for one season as per MOEF guidelines. The following are the concentrations of various parameters at all the monitoring stations.

Particulate matter (PM <sub>2.5</sub> )	-	16.5 to 32.5 µg/m <sup>3</sup>
Particulate matter (PM <sub>10</sub> )	-	24.1 to 49.6 µg/m <sup>3</sup>
Sulphur Dioxide (SO <sub>2</sub> )	-	8.6 to 13.9 µg/m <sup>3</sup>
Nitrogen Oxide (NO <sub>x</sub> )	-	9.4 to 18.7 µg/m <sup>3</sup>
Hydro carbon (methane & non-methane)	-	BDL

### 2.2 WATER QUALITY

Ground water samples were collected at 6 locations and analyzed for various physico – chemical & Bacteriological parameters. The water sample shows that they are suitable for potable purpose.

### 2.3 NOISE LEVELS

Noise levels were measured at 6 stations during day time & night time. The noise levels at the monitoring stations are ranging from 42.35 dBA to 57.40 dBA..

## 3.0 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

### 3.1 PREDICTION OF IMPACTS ON AIR QUALITY

The emissions of concern from the boiler of the Integrated Sugar Complex will be PM<sub>10</sub>, SO<sub>2</sub> and NO<sub>x</sub>. For the purpose of prediction of Ground Level Concentrations the emissions from the existing and expansion boilers are considered. Industrial Source Complex (ISC-3) software is applied for



prediction of GLCs. It is observed that the maximum predicted incremental rise in  $PM_{10}$  concentration after commissioning of expansion plant will be  $0.8 \mu\text{g}/\text{cum}$ , max. Predicted incremental rise in  $SO_2$  will be  $12 \mu\text{g}/\text{cum}$  and that of  $NO_x$  will be  $7.9 \mu\text{g}/\text{cum}$  at a distance of 900 m from the origin stack in the downwind direction.

The predicted results show that the incremental rise over the existing baseline status of ambient air quality will be within the revised National Ambient Air Quality Standards for residential areas even after commissioning of the proposed expansion project.

### **3.2 PREDICTION OF IMPACTS ON NOISE QUALITY**

The major noise generating sources will be Turbo generator, Boiler, Compressors & DG set. The Ambient Noise levels will not exceed the standards prescribed by MOE&F, GOI vide Notification under the Noise pollution (regulation & control) Rules, less than 75 dBA during day time and less than 70 dBA during night time. Extensive greenbelt developed will further mitigate the noise levels.

### **3.3 PREDICTION IMPACTS ON WATER QUALITY**

The effluent generated from Sugar, Co-gen and Distillery will be treated as per CPCB norms to achieve zero discharge. No effluent will be discharged outside the premises. There will be no contamination of ground water or surface water bodies due to the proposed expansion project. Ground water will not be used for the proposed expansion. Hence no ground water depletion due to the proposed project. Rain water harvesting will be taken up in consultation with the State Ground water Board to conserve the precious water.

### **3.4 PREDICTION OF IMPACTS ON BIOLOGICAL ENVIRONMENT**

There are no rare & endangered species in the area. All the required pollution control systems will be installed and operated to comply with the norms. Once all the norms are complied with, then there will not be any adverse impact on flora, fauna due to the proposed expansion project.

### **4.0. ENVIRONMENTAL MONITORING PROGRAMME**

Ambient Air Quality, Sack monitoring & effluent analysis will be carried out regularly as per CPCB norms and the analysis reports will be submitted to Ministry of Environment & Forest, Bengaluru & Karnataka State Pollution Control Board regularly. Online monitors will be installed to the stack.

### **5.0. ADDITIONAL STUDIES**

No Rehabilitation and Resettlement is involved in the proposed expansion project. Hence no R & R study has been carried out.

## **6.0. PROJECT BENEFITS**

With the establishment of the proposed expansion project employment potential will increase. Land prices in the area will increase. The economic status of the people in the area will improve due to the proposed expansion project. Periodic medical checkups will be carried out. Top priority will be given to locals in employment.

## **7.0 ENVIRONMENTAL MANAGEMENT PLAN**

### **7.1 AIR ENVIRONMENT**

There will be two stacks connected to the 45 TPH and 15 TPH boilers in the proposed expansion project. The fuel for the 45 TPH boiler will be Bagasse and 15 TPH boiler will be Concentrated Spent wash. The air emissions of concern from the plant will be PM, SO<sub>2</sub> and NO<sub>x</sub>. Electrostatic Precipitator will be provided to 45 TPH boiler and Bagfilters for 15 TPH Boiler to bring down the particulate emission in the exhaust of the boiler to less than 50 mg/Nm<sup>3</sup>. A stack of 44 m & 50 m height will be provided to 45 TPH and 15 TPH Boilers respectively for effective dispersion of emissions into the atmosphere.

### **7.2 WATER ENVIRONMENT**

#### **A) Sugar Plant**

The effluent from Sugar plant will be treated in Oil & Grease trap, Equalization tank, neutralization tank, Primary clarifier, UASB anaerobic digester, Aeration tank, Secondary clarifier and Sludge drying beds. Treated effluent will be utilized for greenbelt development after ensuring quality of treated effluent with standards stipulated for onland for irrigation by CPCB / KSPCB.

#### **B) Co-generation Power Plant**

Cooling tower blowdown and DM plant regeneration water will be recycled into process. Boiler blowdown and service water effluent will be treated in neutralization tank and treated effluent is will be utilized for greenbelt development / ash conditioning / dust suppression in the plant premises after ensuring quality of treated effluent with standards stipulated for onland for irrigation by CPCB / KSPCB

#### **C) Distillery**

Spent wash generation will be 450 cum/day which will be treated in multiple effect evaporators to concentrate the solids to 60 % and then will be sent to 10 TPH (existing) and 15 TPH (proposed) boilers for incineration. This is totally a zero discharge based technology. This technology is approved by CPCB.

The condensate generated during the process of Multiple Effective Evaporators will be reused in the Process thus decreasing the net water requirement.

### 7.3 SOLID WASTE GENERATION & DISPOSAL

The following table shows the generation & disposal of Solid Waste.

S.No	Solid waste	Quantity (TPD)			Disposal
		Existing	Expansion	Total	
<b>Sugar Plant</b>					
1.	Bagasse	1440	360	1800	Will be used as fuel in Co-gen Boiler (135 & 50 TPH)
2.	Molasses	216	54	270	Will be used as raw material in Distillery
3.	ETP Sludge	0.14	0.1	0.24	Will be used as manure
<b>Cogeneration Power plant</b>					
4.	When Bagasse used as fuel in Boiler	23	8.5	31.5	Will be disposed to farmers to use as manure in Agricultural lands
<b>Distillery</b>					
6.	Yeast Sludge	6	6	12	Mixed with spent wash and incinerated in the boiler.
7.	When concentrated spent wash used as fuel in Boiler	7.2	10.8	18	Ash generated will be given to Group fertilizer unit

### 7.4 NOISE ENVIRONMENT

The major noise source in the proposed expansion project will be Turbo Generator, Boiler, Compressors & DG set. The employees working near the noise generating sources will be provided with earplugs. The extensive greenbelt developed around the plant will also help in attenuating the noise levels further. Noise barriers in the form of trees will be grown around the administrative block, ETP and other utility buildings.

### 7.5 LAND ENVIRONMENT

The effluent generated from the proposed expansion project will be treated to comply with the Karnataka State Pollution Control Board's standards. All the solid waste will be disposed as per norms. Hence there will not be any adverse impact on land environment due to the proposed expansion project.

## **7.6 GREENBELT DEVELOPMENT**

Green belt development will further enhance the environment quality through limitation of air emissions, attenuation of noise levels, balancing Eco environment, prevention of soil erosion and creation of aesthetic environment. 85 acres of greenbelt will be developed in the plant premises as per CPCB norms.