

December 2020

# JAI BALAJI INDUSTRIES LIMITED (UNIT - I)

## EXECUTIVE SUMMARY



**For**

Proposed expansion of existing Steel Plant by installation of Sponge Iron Plant with 1x350 TPD + 1x500 TPD DRI Kilns, 4x25 T Induction Furnaces, 0.6 MTPA Iron Ore Beneficiation & 0.6 MTPA Pelletization Plant & 40 MW capacity Captive Power Plant along with the product mix change of existing 2x7 MVA Submerged Arc furnaces

**At**

G-1, Mangalpur Industrial Complex, P.O.Baktarnagar,  
P.S. Raniganj, Dist. – Paschim Burdwan, West Bengal

  
**Envirotech**

Envirotech East Pvt. Limited

An ISO 9001:2015, ISO 14001:2015 & ISO 45001:2018 Certified Company

Inhouse Laboratory Recognised by Ministry of Environment, Forest & Climate Change, Govt. of India

Accredited by NABET, Quality Council of India as an EIA Consultant

NABET Certificate No.: NABET/EIA/1821/RA 0118.

Baseline Monitoring Period: 1<sup>st</sup> March, 2019 to 31<sup>st</sup> May, 2019

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<b>M/s Jai Balaji Industries Ltd. (Unit-I)</b>	Environmental Impact Assessment for Proposed expansion of existing Steel Plant by installation of Sponge Iron Plant with 1x350 TPD + 1x500 TPD DRI Kilns, 4x25 T Induction Furnaces, 0.6 MTPA Iron Ore Beneficiation & 0.6 MTPA Pelletization Plant & 40 MW capacity Captive Power Plant along with the product mix change of existing 2x7 MVA Submerged Arc furnaces at G-1, Mangalpur Industrial Complex, P.O.-Baktarnagar, P.S. Raniganj, District – Paschim Burdwan, West Bengal	<b>ES - 1</b>
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## EXECUTIVE SUMMARY

### 1.0 INTRODUCTION

**M/s Jai Balaji Industries Ltd. (JBIL, Unit -I)**, a flagship company of Kolkata based Jai Balaji Group, previously M/s Jai Balaji Sponge Ltd. (JBSL), was initially incorporated in West Bengal as a private limited company on 1<sup>st</sup> July 1999 having its registered office at 5, Bentinck Street, 1<sup>st</sup> Floor, Kolkata - 700001, West Bengal has its existing units for manufacturing of 7x50 TPD DRI kilns, 1x50 TPH Coal Washery unit, 2x7 MVA capacity Submerged Arc Furnaces along with 18.3 MW (8.3 MW WHRB + 10 MW AFBC) capacity Captive Power Plant at G-1, Mangalpur Industrial Complex, P.O.-Baktarnagar, P.S. Raniganj, District: Paschim Burdwan in West Bengal.

Now, considering better future market of steel products, the Company has proposed to expand its existing Steel Plant (unit-I) by installation of Sponge Iron Plant with 1x350 TPD + 1x500 TPD DRI Kilns, 4x25 T Induction Furnaces, 0.6 MTPA Iron Ore Beneficiation & 0.6 MTPA Pelletization Plant & 40 MW capacity Captive Power Plant along with the product mix change of existing 2x7 MVA Submerged Arc furnaces within the same existing plant premises. However, the existing 7x50 TPD DRI Kilns and existing 8.3 MW WHRB shall be phased out after the implementation of the proposed project.

The overall project scenario along with their capacities is presented below:

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**TABLE-1.2  
OVERALL PROJECT SCENARIO**

S.N.	Facilities	Existing Capacity	Proposed Capacity	Ultimate Capacity
1.	DRI Plant	* 7 X 50 TPD or 1,05,000 TPA	1X350 TPD + 1X500 TPD or 2,80,500 TPA	1X350 TPD + 1X500 TPD or 2,80,500 TPA  <b>(*The existing 7X50 TPD shall be phased out after the implementation of the proposed project)</b>
2.	Coal Washery	2,16,000 TPA (1x50 TPH)	-	2,16,000 TPA (1x50 TPH)
3.	Iron ore Beneficiation Plant	-	6,00,000 TPA	6,00,000 TPA
4.	Iron ore Pellet Plant	-	6,00,000 TPA	6,00,000 TPA
5.	Steel Melting Shop (Induction Furnace)	-	3,30,000 TPA (4 X 25 MT)	3,30,000 TPA (4 X 25 MT)
6.	Ferro – Alloys Plant	2 X 7 MVA SAFs  Ferro- Manganese – 15,576 TPA  Silico Manganese – 14,580 TPA  <b>Total 30,156 TPA</b>	Change of Product-Mix (Ferro-Chrome inclusion)  <u>Keeping the plant configuration unchanged</u>	2 X 7 MVA SAFs  Either Ferro Manganese - 30,156 TPA (capacity optimized) or Ferro Chrome – 24,000 TPA (capacity optimized) or Silico-chrome 15,840 TPA (capacity optimized) Or Ferro-Silicon – 11,220 TPA or Silico Manganese- 29,160 TPA  <b>Total Ferro-Alloys production will never cross 30,156 TPA.</b>
7.	Captive Power Plant	18.3 MW  (8.3 MW WHRB ** + +)	40 MW  (20 MW WHRB + 20 MW AFBC )	50 MW [20 MW WHRB + 30 MW (10 MW existing + 20 MW proposed)]

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		10 MW AFBC )		AFBC ] (**The existing 8.3 MW WHRB shall be phased out after the implementation of the proposed project)
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M/s Envirotech East Pvt. Ltd. have conducted an Environmental Impact Assessment (EIA) for the proposed project and formulated an appropriate Environmental Management Plan (EMP) for such proposed project.

## 2.0 SITE LOCATION

The proposed project site is located at G-1, Mangalpur Industrial Complex, P.O.-Baktarnagar, P.S. Raniganj, District Paschim Burdwan in the state of West Bengal. Geographical coordinates of the Project Site of proposed expansion Project are Latitude: 23°36'10.75"N to 23°36'43.57"N and Longitude - 87°8'49.32"E to 87°9'11.10", with elevation is about 88 m to 107 m (290 ft to 350 ft)(AMSL).

The four points on the boundary of the project site are as follows:

1. Latitude - 23°36'45.01"N & Longitude - 87°8'55.25"E (TRC)
2. Latitude - 23°36'36.97"N & Longitude - 87°9'7.42"E (BRC)
3. Latitude - 23°36'17.38"N & Longitude - 87°8'53.09"E (BLC)
4. Latitude - 23°36'23.30"N & Longitude - 87°8'41.53"E (TLC)

(Where, T: Top, B: Bottom, L: Left, R: Right, C: Corner)

The project site already has proper road linkage for transport of materials and equipment. Nearest Railway Station is Raniganj Railway Station which is passing through the west south west direction, around 3.3 Km w.r.t. the project site. Nearest road is Grand trunk Road (National Highway - 2) is just about 30 m distance from the project site.

The nearest industrially developed town is Raniganj and Andal, which are located at around 2.5 km in north-west direction and 6.0 km in south-east direction respectively w.r.t. the project site. Important towns like Asansol is located about 20.3 km in north-west direction and Durgapur is located about 19.6 km in south-east direction w.r.t. project site. River Ajay is passing approximately at a distance of 14.5 kms from the project site towards north and River Damodar is

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passing approximately at a distance of 4.5 kms from the project site towards south-west direction.

The nearest Airport is Kazi Nazrul Islam Airport, Andal is located about 9.2 km in east direction w.r.t. the project site and the Netaji Subhas Chandra Bose International (NSCBI) Airport, Kolkata is located around 170 km in south-east direction w.r.t. the project site.

### 3.0 PROJECT HIGHLIGHTS

The principal features or highlights of the proposed project of **M/s Jai Balaji Industries Ltd. (Unit - I)**, under study are as follows:

<b>Location</b>	G-1, Mangalpur Industrial Complex, P.O.-Baktarnagar, P.S. Raniganj, District: Paschim Burdwan in the state of West Bengal.
<b>Land requirement</b>	The proposed expansion project will be installed on 34.8 hectares (86 acres) of land within the existing plant premises.
<b>Raw water requirement &amp; source</b>	2569 m <sup>3</sup> /day (Existing 944 m <sup>3</sup> /day* + Proposed 2070 m <sup>3</sup> /day, including 50 m <sup>3</sup> /day for drinking, greenery and sanitary purpose) [* Since the existing 7x50 TPD DRI Plant and 8.3 MW WHRB shall be phased out after the implementation of the proposed project, 445 m <sup>3</sup> /day will not be needed in future.]  <b>Source</b> : The requisite amount of make up water will be sourced from Asansol Durgapur Development Authority (ADDA).
<b>Power requirement</b>	64 MW (Existing 14.8 MW* + Proposed 51.5 MW) [* Since the existing 7x50 TPD DRI Plant and 8.3 MW WHRB shall be phased out after the implementation of the proposed project, 2.3 MW will not be needed in future.]  <b>Source</b> : From proposed own 40 MW Captive Power Plant & rest from DVC / India Power.
<b>Effluent generation &amp; disposal</b>	The plant is designed as a zero discharge plant. No additional waste water is being generated from the process after proposed expansion of the existing steel plant. Wastewater generated from the cooling system is re-used after necessary treatment as per the present practice. The entire treated waste water is recycled for various purposes inside the plant.  Domestic waste water generated from the plant is treated in

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	septic tank-soak pit system. The treated water is used for different non-critical purposes like gardening, dust suppression etc. inside the plant.
<b>Air pollution control</b>	Adequate control measures like installation of Electrostatic precipitator, bag filters, dust suppression system and stacks of adequate height at relevant points.
<b>Solid Waste Management</b>	<ul style="list-style-type: none"> <li>➤ Dolochar from Sponge iron plant will be used in AFBC Boiler.</li> <li>➤ The dewatered tailings from iron ore beneficiation and the tailings cake shall be disposed off using standard practice. No tailing pond has been proposed inside the plant premises.</li> <li>➤ Slag from Induction Furnaces after metal recovery in metal recovery plant will be used for Land filling / Road Construction purpose.</li> <li>➤ Fe-Cr Slag after Chrome recovery through the Jigging process will be used in land filling / road construction purpose. TCLP Test shall be carried out all around the storage area on regular basis.</li> <li>➤ Fly ash from AFBC boiler will used in Cement Plant &amp; Brick Manufacturing Units.</li> <li>➤ The bottom ash from Captive Power Plant will be used as land filling.</li> <li>➤ End cuts, scales and scraps etc. from CCM will be used in the Induction Furnaces.</li> <li>➤ Domestic solid waste from the plant and staff quarter will be disposed of suitably in consultation with the concerned authority.</li> </ul>
<b>Manpower</b>	Total 1653 persons. (existing 753 + proposed 900)
<b>Project cost</b>	Rs. 392 Crores.

#### 4.0 BASELINE ENVIRONMENTAL SCENARIO

The area falling within the radius of 10 km around the project site at G-1, Mangalpur Industrial Complex, P.O.-Baktarnagar, P.S. Raniganj, District: Paschim Burdwan in West Bengal has been considered as study area. On-site environmental quality monitoring was carried out from 1<sup>st</sup> March, 2019 to 31<sup>st</sup> May, 2019.

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#### 4.1 Meteorology

The monthly maximum and minimum temperatures recorded on-site during the aforesaid monitoring period varied between (32.0 – 43.5)°C and (22.0 – 23.5)°C respectively with overall maximum and minimum temperatures being 43.5°C and 22.0°C respectively

The monthly minimum and maximum relative humidity recorded on-site during the said monitoring period varied between (46-59)% and (66-73)% respectively, the overall minimum and maximum being 46.0% & 73.0% respectively.

During the said monitoring period, the monthly mean wind speed measured on-site varied between 5.9 km/hr (April, 2019) to 7.3 km/hr (May, 2019) The overall mean wind speed during the period was 6.8 km/hr. The predominant wind direction was observed South-west.

#### 4.2 Ambient Air Quality

Ambient air quality was monitored at eight (8) locations in and around the project site.

The overall mean values of PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, NO<sub>2</sub> and CO in the area (mean of all the 8 locations) were 68.4 µg/m<sup>3</sup>, 28.8 µg/m<sup>3</sup>, 9.6 µg/m<sup>3</sup>, 20.5 µg/m<sup>3</sup> and 0.450 mg/m<sup>3</sup> respectively.

#### 4.3 Water Quality

Water samples were collected and analyzed at total Ten (10) locations for surface water, including two different locations from (2) Damodar River & eight (8) pond water samples and Nine (9) locations for ground water to assess the water quality in the study area.

##### River Water Quality from Damodar

The pH values of the collected samples from river were found to be 6.9-7.1. The values of Dissolved Oxygen were observed 6.8 - 7.1 mg/l. Values of Total Dissolved Solids from the samples were found 203 - 208 mg/l while values of Total Hardness were found 102 - 104 mg/l. Values of Calcium were found to be 31 - 33 mg/l while values of Magnesium were found to be 13 - 14 mg/l. Sulphate, Nitrate and Chloride were observed to be 26 - 27 mg/l, 1.9 - 2.2 mg/l and 27 - 29 mg/l. The Iron contents from these two samples were found to be 0.16 - 0.17 mg/l respectively.

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### **Pond Water Quality**

The pH value from the collected pond water samples was found in the range of (6.4 - 7.4). Dissolved Oxygen was observed in the range of (5.9 - 6.6) mg/lit. Total Dissolved Solids were found in the range of (230 - 315) mg/lit while Total Hardness was found in the range of (132- 191) mg/lit. Chloride, Calcium & Magnesium were found from these seven pond water samples varying in the ranges of (58 - 90) mg/lit, (42 - 63) mg/lit and (6 - 16) mg/lit respectively.

Heavy metals like copper, lead, mercury, cadmium and chromium were below their respective detection limits.

### **Ground Water Quality**

The pH values of collected ground water samples were found in the range of (6.6 - 7.6). Values of Total Dissolved Solids (TDS) were found in the ranges of (313 - 520) mg/lit while Total Hardness were found in the ranges of (160 - 192) mg/lit. Calcium and Magnesium were found varying in the ranges of (49 - 62) mg/lit and (6 - 15) mg/lit respectively. Sulphate, Nitrate and Chloride were observed in the ranges of (18- 48) mg/lit, (4.6 - 7.6) mg/lit and (77 - 138) mg/lit respectively. Iron contents were found in the ranges of (0.22 - 0.55) mg/lit and zinc contents were found (<0.05) mg/lit. Alkalinity was found in the ranges of (158 - 243) mg/lit.

Other heavy metals like copper, Chromium, Cadmium, Arsenic and Lead were below their respective detection limits.

#### **4.4 Noise**

A total of 10 locations around the proposed project were selected for the measurement of ambient noise levels.

During the day time, the equivalent noise levels were found to vary in the range of (54.2 - 70.9) dB(A) while in the night time, the equivalent noise levels were observed to vary in the range of (46.0 - 56.1) dB(A).

#### **4.5 Ecology**

The study area has substantial vegetation in the form of village orchards, roadside trees and agriculture. If the gaseous emission is controlled properly, there will not be significant impact. There will be sufficient plantation of trees at the plant site. All these measures, if implemented properly will ensure insignificant impact on the local



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vegetation from the proposed project and may improve the vegetation scenario of the area.

No waste water will be discharged outside the plant premises. There is, therefore, no impact on the aquatic ecology of the water bodies.

#### 4.6 Demography and Socio-economy

The study area comprises of 64 villages, 28 Census town areas and 7 CT Wards. The study area is rural-urban mixed in nature. The study area is not so much densely populated with the total population of 3,62,118 (as per 2011 Census), but some of the areas like Jamuria, Raniganj, Andal, Pandabeswar & Mejhia has dense population. The sex ratio is about 883 females per 1000 males. The overall literacy rate is about 64.98%. Male literacy rate is 73.03% (w.r.t the male population) and female literacy rate is 56.10% (w.r.t the female population). The principal staple food is rice.

## 5.0 ENVIRONMENTAL IMPACTS OF PROPOSED PROJECTS

### 5.1 Impacts on Air Quality

The major sources of continuous emission from the existing units are two (2) Nos. of stacks, which are attached to Ferro Alloy Plant and 10 MW AFBC.

In the proposed expansion project, total six (6) stacks will be attached with the corresponding units. Stack emissions would be constituted of mainly SO<sub>2</sub>, NO<sub>x</sub> & Particulate matters (PM). Out of the total 6 (six) proposed stacks, two (2) stacks will be attached with WHRB boiler utilizing waste gas from proposed 1x350 TPD + 1x500 TPD DRI kiln, two (2) stacks will be attached with Induction Furnaces (each with 4x25 T); one (1) stack will be attached with Pelletization Plant (0.6 MTPA) and one (1) stack will be attached with 20 MW AFBC Boiler.

As recommended by CPCB, GLCs at various receptor locations within 10 km radius have been computed for the three months' period (**1<sup>st</sup> March, 2019 to 31<sup>st</sup> May, 2019**) representing the summer season, based on the hourly meteorological data of this period. The computation has been made applying Industrial Source Complex (ISC3) model, developed by United States Environmental Protection Agency (USEPA), which is most widely used and also recommended by CPCB (PROBES/70/1997-98).

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The maximum incremental value of SO<sub>2</sub>, NO<sub>x</sub> & PM for **Case-I** would be about 2.66 µg/m<sup>3</sup>, 2.66 µg/m<sup>3</sup> and 3.04 µg/m<sup>3</sup> respectively, which will occur at a distance of 0.2-0.3 km in NNW & E directions. The predicted maximum GLCs of SO<sub>2</sub>, NO<sub>x</sub> & PM due to the operation of the proposed plant is well within the prescribed limits. Therefore, there will be insignificant impact on the Air Quality of the area due to the operation of the project.

### 5.2 Impacts on Water Quality

Company will follow “the zero wastewater discharge concept” and the entire wastewater will be recycled to the plant for various uses. As no wastewater will be discharged into any outside water body, there will be no impact on the water quality of any surface water bodies of the area.

### 5.3 Impacts on Soil

There will be solid waste generation, but will be managed in the proper manner. This will ensure that there will not be any impact on soil quality due to the disposal or deposition of solid waste.

### 5.4 Impacts on Land Use

The proposed development will be confined within the boundary of the allocated land only, earmarked for the industrial purpose, so there will not be any significant impact on the land use pattern of the area.

### 5.5 Impacts on Biological Environment

The surrounding area has substantial vegetation in the form of village orchards, roadside trees and agriculture. If the gaseous emission is controlled properly, there will not be significant impact. There will be sufficient plantation of trees at the plant site. All these measures, if implemented properly will ensure insignificant impact on the local vegetation from the proposed project and may improve the vegetation scenario of the area.

No wastewater will be discharged outside the plant premises. There is, therefore, no impact on the aquatic ecology of the water bodies.

### 5.6 Impacts on Socio-Economic Environment

The project will offer substantial employment potential during construction phase and operation phase, which will have beneficial impact.

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## 6.0 ENVIRONMENTAL MANAGEMENT PLAN

M/s Jai Balaji Industries Ltd. (Unit-I), will develop various management activities for the Environmental Management Programme which will meet all statutory requirements and help to improve environmental quality.

In order to improve the aesthetic look of the area and enhance the land use as well as to compensate for any loss in ecology during construction, adequate plantation programmes around the project site have been planned and will be adopted. Development of green belt will include plantation of trees along boundary of the factory, roads, raw material yard and other available spaces. 33% of total area of factory will be covered under green cover.

A detailed monitoring for different environmental parameters will be carried out as per direction of State Pollution Control Board. An environmental management group will be established to implement the management plan.